



SHAPING NATIONAL POLICIES AT THE TIME OF GLOBAL TECHNOLOGICAL CHANGE: THE CASE OF RUSSIA

SERGEY GLAZYEV¹

Mechanism of present economy development

Modern economic growth is characterized by importance of scientific and technological change and intellectualization of main production factors. The share of science and technological progress in GDP growth of developed countries is estimated 70% to 80% of gross national product growth [1, 2] in developed countries. Introduction of innovations has become the key factor of market competition, allowing leading enterprises to gain super profits due to obtaining intellectual rent.

Transition to continuous innovation process in managing practice became an important peculiarity of modern economic growth. R&D play more and more significant role in structure of investments, exceeding in science intensive branches capital formation. The share of R & D expenses in gross national product to 3% of gross national product in developed countries. More than one third of it is financed by state. Intensity of R&D is the level of economic growth – countries, which provide favorable conditions for scientific and technological advance, win in the world economic competition.

The role of state modern economic growth is caused by specific features of innovation processes: high risk, dependance from level of scientific development and infrastructure, significant capital intensity of scientific researches, uncertainty of commercial opportunities, qualification requirements, necessity of intellectual property rights. That's why business success in the world competition depends greatly on state scientific and technical policy.

A significant feature of modern economic growth is its nonlinear cyclical form due to periodic replacement of large complexes of technologically connected production chains– technological modes [1]. In process of every structural crisis of world economy, accomponing process of replacement of dominating technological modes, new opportunities of economic growth appear. Countries, leading in the previous period, face devaluation of capital and qualifications in production chains of obsolescent technological mode. At the same time countries, which have already created necessary prerequisites for forming industrial-engineering systems of a new technological mode appear to be centers of accumulation of capital, released from old industries. Each time the change of dominating technological mode

¹ Russian Academy of Sciences, <su_glazyev@guu.ru>

is accompanied by a serious shift in international labor division and in a list of successful companies and leading countries.

The technological mode that is dominating today, was settled as a whole reproduction system in the 50-60-ies and formed the technological base for economic growth till the structural crisis of the 70-ies. The core of this technological mode consists of microelectronics, software, computer engineering, information organization technologies, production of computer-aided and communications facilities. Development of this technological mode is accompanied by corresponding shifts in power consumption (increase of natural gas consumption), in transport system (increase of avia transportation), in construction materials (growth of production of combined materials). New principles of industry organization are used: continuous innovation process, flexible automation, principle of “just in time” in logistic, new types of public consumption and a new way of life. The latter are characterized by change of values and consumers’ preferences in favor of education, information service, quality food, healthy environment. Stereotypes of the so called “consumer culture” are replaced by quality of life.

The key role among the bearing industries of this technological mode was played by flexible automated industries and CALS technologies that complemented them. The means of flexible automation of industrial production vastly increased the range of products. Along with the informatization of distribution, this provided conditions for individualization of consumption. Consumer properties of traditional goods have considerably developed. For instance, approximately 70% of the value of a modern car is formed by its information components. [6]. The substitution of the mass consumption culture by individualization of people’s consumer preferences has allowed to increase their purchasing power and encourage the growth of production of goods and services, which provided a favorable economic situation during the following two decades.

The drastic decrease in the value of information services led to multiple expansion of opportunities in the fields of telecommunications, education, medical care, culture and science, which became basic, bearing branches of the modern technological mode. There was a transition towards new principles of industrial organization: continuous innovative process, CALS technologies of scientific and production cycles management, flexible automation of production, organization of material supply in line with the ‘just-in-time’ principle. Consumer preferences have shifted towards education, information services, quality food, and healthy environment. The stereotypes of consumer society are being replaced by the goals of the quality of life.

The development of super-speed transportation systems and global mass media networks has radically changed human’s perception of time and space. This, in its turn, has affected the structure of people’s preferences and motives of behavior. The globalization of social and production relationships sharply increases the diversity of people’s spiritual and material needs as well as the possible application fields for their intelligence and labor. This has a strong adverse effect of the expansion of production capacity and development of productive power.

The spread of the modern technological mode is characterized by the exclusively high rate of efficiency growth of its key factor. The fast decline in the value of a unit of computing power (generations of computers succeed one another every 2-3 years and computer power is doubled every 18 months) [53] makes it difficult to measure the growth of this technological mode with production indices of the goods representing its core (integrated circuits, computers, information and communications equipment). The measurements of application of information technologies give a more adequate presentation of its expansion. For instance, in the USA the employment in the sphere of information engineering maintenance increased in 1992-2002 by 25%, the number of employed in the sphere of its production being constant [4]. As the value of production volume of computers and communications equipment diminished in 1998-2003 more than by 15%, the physical volume of information services production doubled and the basic capital of this sector increased 1.7 times.

It follows that cost estimates of computer production growth and informatization do not fully reflect the increase in the scale and the role of the modern technological mode in economy. The share of investments in information and communications technologies (ICT) in the aggregate investments in production (which have risen from 15% in the early 80s to 35% by the beginning of 2000) gives a more precise picture. According to existing estimates, the contribution of information technologies in the developed countries to the annual GDP growth during the last decade reached approximately 30%.

Since 1980s, the growth rates of the modern TM branches in developed and new industrial countries have reached 25-30% per annum, 3-4 times exceeding the growth rates of industrial production [5], with contribution to GDP growth amounting to 50% in 1980s-1990s [3, p.10]. This indicates that the technological mode entered the phase of fast growth which was accompanied by fast increase in economic efficiency. For instance, the growth rates of labor capacity in the private sector of American economy rose from 0.80 in 1990-1995 to 3.05% in 1995-2000 correspondingly [6]. The identified regularities of technical and economic development allow us to predict further growth of the current TM over about one more decade during which it will determine the development of the world economy. In order to measure corresponding technological shifts, we used (along with the production indices of the goods representing the core of the modern technological mode) the indices of market saturation with communication facilities, computing machinery, electronics as well as the Internet density. Time series of corresponding indices in Russia and other countries were processed using the method of principal components, the first of which is a generalized growth characteristic of this TM (see Fig.5). Therewith, different feature sets were used for the embryonic stage of growth (up to 1985) (see Fig.6) and for the growth during the maturity stage (after 1995). Likewise, on the basis of processing a score of development indices of the previous TM, in [1] a generalized growth characteristic of this TM was built (see Fig.7).

The inter-country quantitative research of Techno-Economic Development (TED) paths showed that technical development of Russian economy followed the same path as in other countries. At the same time, it was much slower. The relatively lower development rates of the Soviet economy were explained by its self-reproducing technological multi-mode that

hindered timely redeployment of resources in the course of development of new technologies. By 1990s, simultaneous reproduction of several technological modes that existed in the Soviet economic structure at the same time had flattened out.

Unlike market-economy countries, where the modern TM expanded quickly since mid-80s, its growth rates in the USSR economy at this time drastically dropped. There was a quality leap in the accumulation of imbalances caused by the self-reproducing technological multi-mode of the Soviet economy. Simultaneous expanded reproduction of three technological modes as a result of general resource limitations led in mid-70s to decline in the growth rates of each of them including the new one as well as the overall economic growth rates and an overcooling of progressive structure shifts (see Fig. 8).

As was shown in [1], production development of the previous technological mode was three decades late in the USSR compared to the global TED path. Results of the measurements show considerable arrears of our economy in the production development of the modern technological mode already at the embryonic stage of its growth. And now as it has moved to the phase of fast growth, its core in the Russian economy is tens times smaller than in the developed countries as evidenced by electronics production per capita in various countries (see Table 1). Russia's share on the world electronics market makes less than 0.1-0.3%. It is the same (0.2%) on the information technologies market, which is 25 times less than that of China and 15 times less than India has [7]. No wonder that the contribution of ICT to Russia's economy growth is three times smaller than that of the developed countries and even of that of Thailand. [8]

At the same time, with the development level of one of the main branches of the modern TM – aerospace technologies – Russia occupies one of the leading positions in the world. More specifically, the share of Russian companies on the space shot market reaches one-third [5], and top positions on the military aircraft market are maintained. The income share of Russian companies on the world market of space technologies is however only about 2% [9].

Although in general the information sector in Russian economy develops quite dynamically, its weight totals only 5-7% of GNP compared to 30-35% in the developed countries [7, 42,]. The number of new information technologies has increased by an order as in comparison with the early 90s, but the share of ICT in the GNP does not exceed 1% (by contrast to 2.5-4.5% in the USA, Japan and EU). With the volume of the world software market amounting to 400-500 billion USD per year, Russian share makes just a little more than 200 million USD, i.e. 0.04%. There is a lagging behind the world level in the ICT sector and labor capacity, which makes 40% of the USA level [10]. This lagging is explained by the lack of investments in the development of information technologies, the level of which after a decade of disinvestments in recent years made less than 2.5% of GDP by contrast with 6.6% in the USA, 5% in Japan and 3.8% in the EU in the course of the last three decades.

As it follows from the measurement results and existing estimates, today, during the growth phase of the modern technological mode, which has reached its maturity stage, its expansion in Russia proceeds in the bearing branches whereas the core remains immature.

‘There has been a heavy drop in such core branches of the modern TM as production of microelectronics and electronics, radio engineering, optoelectronics, civil aircraft industry, refined steel, composite and new materials, industrial equipment for knowledge-intensive industries, precision and electronic instrument engineering, devices and appliances for telecommunications and modern communications systems, computers and other components of computing machinery – as contrasted with the level of 1990-1991,’ acknowledges academician Fedosov. ‘The lagging behind the world level in these technologies is very hard to overcome even if granted some impressive investments’ [11].

During the maturity phase of the dominating TM the negotiation of the technological lagging in the sphere of its key technologies requires huge investments, whereas purchase of imported equipment enables quick satisfaction of the given needs. Thus, this is what happens in our country as evidenced by the growth indices of the personal computers park, the number of Internet users, the export volume of software services and other indications of the expansion of use of the modern technological mode technologies in its main branches with the rate of about 20-50% per year [12].

It follows that the expansion of the modern technological mode in Russia has a pursuit imitation character. This is evidenced by the relative dynamics of the expansion of its various components – the closer is the technology to the sphere of final consumption, the higher is its expansion rate. Rapid expansion of the main branches of the modern technological mode proceeds on the foreign technological base, which deadens the chances of an adequate development of the key technologies of its core. This means that Russian economy is being trapped by the non-equivalent trade with the foreign core of this technological mode in which the main part of the intellectual rent is generated.

As it follows from long-term prognosis of technical and economical development, the limit of stable growth of currently dominating technological mode will be reached in the second decade of XXI century. By that time a reproduction system of the next technological mode which begins its settlement today, will be formed. Key factor of it’s development can be already seen: nanotechnologies, biotechnologies, global information networks and integrated high speed transport systems, flexible computer integrated production of combined materials with previously settled features, nuclear power engineering, avia transportation. Growth of natural gas consumption will be completed by extension of sphere of consumption of hydrogen as nonpolluting energy carrier. In management of organization we shall see the quick permanent innovation process in the majority of branches and continuous education for the majority of occupations. Transit from the consumption culture to intellectual culture, where standards of living and habitat comfort will be the most important aspects, will be finished. Information, education and medical service will be the most important components of the consumption structure. Progress in information organization technologies, telecommunication systems, financial technologies will lead to further globalization of economy, settlement of common world market of goods and services, capital, labor.

There is succession between the modern and the newest technological modes. Their key factor is information technologies based on the use of knowledge of elementary material

structures as well as information processing and transmission algorithms obtained by fundamental science. The boundary between them lies in the depth of technology penetration into the material structures as well as in the scale of information processing. The modern technological mode is based on the use of microelectronics achievements in the management of physical processes at the micron level. The new technological mode is based on the use of nanotechnologies operating on the level of one-billionth of a meter and capable of changing the molecular structure of a substance while giving to it some brand new properties as well as of penetrating the cellular structure of living organisms to transform them. Together with the greater power of computing machinery, nanotechnologies enable the creation of new structures of living and non-living matter incubating them on the basis of self-reproduction algorithms.

The transition towards the new TM is effected through another technological revolution that cardinally raises the efficiency of the main lines of economic development. The value of computing machinery production and maintenance on the basis of nanotechnologies will decrease by an order, the volume of its use will increase manifold due to miniaturization and adjustment to specific consumer needs. Medicine will obtain technologies that will fight diseases at the cellular level implying accurate delivery of medical agents in minimum volumes and with maximum use of the regeneration capabilities of the body. Nanomaterials have unique target-oriented consumer properties. Genetically modified microorganisms speed up the processes of metal and pure materials extraction from raw ore, thus revolutionizing the chemical and metallurgical industry.

No less impressive changes are predicted in engineering industry. On the basis of 'nanocomputer - nanomanipulator' system, automated assembly sites may be organized that will be capable of assembling any macroscopic objects on the base of a three-dimensional atomic pattern layout which is either shot beforehand or developed. With the development of nanomedical robots prolongation of human life will become possible. The problem of alteration of human body in order to increase its natural capabilities will be solved [13].

At present, the new technological mode is in its embryonic phase of development; its expansion is restrained by its small scale as well as immaturity of corresponding technologies and the socio-economic environment that is not ready to use them widely. Although the costs of nanotechnologies development and the scale of their use grow exponentially, the total weight of the new technological mode in the structure of modern economy remains insignificant, yet with a tendency for quick growth.

According to prognoses of the US National Science Foundation, by 2015 the annual sales of the nanotechnologies market will reach 1 billion dollars [14]. Since 2020s this TM will enter the phase of quick growth. At the same time the expansion of the new technological mode is in many ways mediated by the same main branches as in the modern mode – education, culture, telecommunications, business services – and the expansion of these branches is the common feature of the two modes. Along with these ones, the information revolution covers health care and agriculture (due to the use of molecular biology and genetic

engineering achievements) as well as creation of new materials with predetermined properties. CALS technologies become a dominating culture of production development management.

Although the existing statistics will not enable us to give a complex estimate of the development of the new TM, there is no doubt that its development in Russia also lags behind. But this lagging occurs in the phase of embryonic development and may be overcome in the growth phase. To achieve this, one has to master the key industries of the core of the new technological mode before a large-scale structure rearrangement and its further expansion will enable us to collect intellectual rent on a global basis. Russian science has enough potential knowledge to do this and some very perspective achievements, which, if mastered in time, may provide for the leading position of Russian enterprises atop another long wave of economic growth. Russian scientists have a priority in discovering the technologies of cloning living organisms, stem cells and optoelectronic measurements. A review of existing results carries inference that science and industry in Russia have all the necessary innovative potential in the sphere of nanotechnologies and nanomaterials [15].

Timely mastering of the existing scientific and technical capacities in the key lines of establishment of the new technological mode remains a problem. Although Russian science and education have sufficient human resources to achieve this, lack of financing leads to brain drain.

Mechanisms, described above, reflect economic development of leading countries. Being on the front line of scientific and technical progress and forming reproduction outlines of new technological modes, they play the role of “locomotives” of global economic development. Other countries have to imitate achievements of the world leaders and use results, achieved by them, giving their natural resources and cheap labor in return. This exchange is of nonequivalent character – leading countries realize their technological superiority imposing on the rest of the world convenient and profitable rules of international macroeconomic cooperation and appropriating intellectual rent in global scale.

Settlement of a new technological mode begins right now. Comparative advantages are being formed today. They will determine geopolitical competition in the middle of XXI century. There is education, health protection of population, science development carrying capacity, accessibility and filling of infomedia, conditions for self-realization of youth, protection of environment, development of manufacturing systems of a new technological mode – are among key factors, determining national competition abilities.

Significance of scientific and technical progress, ability to install new technologies is increasing in geopolitical competition. The role of human factor in manufacturing organization becomes more important. Countries, which are unable to maintain a decent level of education for its population, science development and infomedia quality, will be doomed to increase dependence from external financial and information centers and will reserve only the functions of providers of natural resources and manpower for transnational corporations from developed countries, which concentrate global intellectual potential.

Global competition is held more between transnational reproduction systems, each of which unites national systems of population education, capital accumulation, science

organization on one hand and – manufacture and business structures, which are actors of global market on the other, than between countries. Several such systems, associated with each other, determine global economic development. They form the core of global economic system, accumulating intellectual, scientific and technical, financial potential.

Transnational corporations, connected with the core of the world economic system, even today control more than one half of turnover of world trade and finance, the most profitable branches of economies, including extractive industry and science intensive industry, telecommunications, industrial infrastructure. Many transnational corporations exceed by their economic turnover large countries, influence governments and passing of international law as well as functioning of international institutions. Leading 500 enterprises cover more than one third of export of manufacturing industry, $\frac{3}{4}$ of world trade of raw-materials, $\frac{4}{5}$ of trade of new technologies, provide work for tens of millions of people in all countries of the world.

Transnational capital concentration and manufacturing has reached a brand new level, which allows us to speak of a new world organization settlement, organization, in which the major role is played by international capital, transnational corporations and international organizations, connected with the core of the world economic system. Countries, which are not included in this organization, form peripheria, lacking inner integrity and conditions for independent development. Relations between the core and the peripheria are characterized by nonequivalent economic exchange in process of which countries forming peripheria have to pay intellectual rent, contained in imported goods and services, at the expense of natural rent and labor costs, contained in exported raw-materials and low technologies goods.

Dominating over peripheria, the core draws out of it the high quality resources – the best intellects, scientific and technologic achievements, property rights and the most significant contents of national wealth. Accumulating financial potential, the core imposes on the peripheria its own rules of capital movements and use of its own currency, setting by that control over financial systems of peripheria and obtaining superiority in the scope of the world economic system. Lacking main internal sources of development, countries of peripheria lose possibilities of realizing independent economic policy and controlling development, turning into economic space to be developed by international capital.

Global economic development is determined by a complex of two conflicting tendencies: submission of the world economy to transnational capital interests and competition of national economic systems. These tendencies are deeply intertwined, creating in each country a unique complex of internal and external factors. Diversity of such complexes include both total dependence of countries of peripheria, where transnational capital dominates completely, and powerful national economic systems of Japan, China, the EU, the USA, where economic policy of state is determined by national capital interests and national manufacturers.

Each country's economic model settlement faces rough competition of transnational capital and national one over state institutions of control. Their interests are different and often quite opposite, as well as values and methods of influence on the economy.

Transnational capital longs to achieve total control over world market and each country destroy all economic, culture and political borders between nations. It overrides competitive abilities of each country for its own favor, establishes comfortable global environment, law and even coercive infrastructure. International institutions that serve its interests long for dominating over national state institutions, destruction of any barriers on the way of international capital flows, as well as that of goods and labor.

At the same time, international institutions and transnational corporations are inseparably linked with national state institutions of the core of the world economic system, which provides flow of new knowledge, reproduction of intellectual potential and world currency supply. Reproduction of the existing system of global economic relations assumes constant dominating of the core over the peripharia, which is achieved through destruction of their national sovereignty institutions. Political demands of the structures, serving the core of the world economic system, are total liberalization and deregulation of economy, destruction of state regulation, exclusion of even the possibility of realizing purposeful structural, industrial and innovation policy, and independent money creation, its connection to foreign currency acquisition. Varieties of the latter are national currencies of the countries of the core (dollar, euro, yen). It provides them to appropriate the senjorugue countries of the peripharia, depriving them of independent development mechanism.

The strategy of dominating, connected with the core of the global economy of international capital is not of a total character today. Its efforts are currently focused on gaining control over the most profitable scopes of activity – where the source of super income is possession of political, natural or intellectual monopoly – management of public debts, currency issue, banking, managing or law services, international trade, extractive industry, natural monopolies, energy power, immaterial goods, science intensive industry and new technologies usage. Other scopes of activity, where market competition grades possibilities of monopolistic rent acquisition, are less attractive for transnational capital and are developed mainly by national business.

Objectively speaking, national interests of each country dictate corresponding priorities of international cooperation. In countries, which pretend to develop independently, processes of opening of national markets, foreign capital formation, international cooperation are held under national control and accompanied by protection of national market, limitation of foreign investments in spheres essential for national interests, support of national manufacturers and stimulating of their competitive abilities growth, creation of leading enterprises, which will be able to compete successfully and be “locomotives” of national economy in conditions of global economy. At the same time, the more national elite of a country realizes competitive abilities of economy of its country, the more chances to use international cooperation of industry successfully in the interests of its own social and economic development it has.

Political securing of the core of the world economic system domination is achieved through the means of connected institutions settling external control over the government of peripharia countries and its further destruction, its replacement by international law and

international institutions. The key methods of the process are: drawing countries into the process of nonequivalent external economic exchange and debt dependence, political, ideological and material corruption of their national elite. It is achieved through diverse informal structures and contacts, where necessary appointments in government are made and where official permissions are prepared and real policy is formed. Apart from the mechanisms of informal influence, the key role in the process is played by different international organizations, first of all – the World Bank, and in special cases mechanisms of the NATO influence are used. The ideological base of the policy, which is carried out by them, is the same theory of radical liberalism. Weakening and destruction of government, political, ideological and cultural control destroys barriers on the way of free transit of transnational capital, submitting economy of whole countries and continents to its interests.

This activity result in continuous growth of role of the core of the world economic system, which include the USA, Western Europe and Japan. The rest of the world is divided into countries, which try to become independent centers of transnational capital accumulation, produce their own world leaders (new industrial countries of South East Asia, China, India, Brazil) and get rid of peripheriadependence, and countries-colonies, lacking national sovereignty, transformed into sources of cheap raw materials and labor for transnational capital. Unlike colonialism of the past, based on military force of mother countries, modern colonialism is secured by governments and national elite of seeming sovereign, but de facto totally dependant countries. Burdened by numerous debts, ran by biased bureaucracy, lacking internal sources of development, the majority of Asian countries and almost all countries of Africa are doomed to tough external dependence and nonequivalent economic exchange. Nonequivalent economic exchange between the core and the peripheria is characterized by entrapping of the peripheria by raw-material specialization and external debts.

Overcoming of continuously increasing great technical lag between the core and the peripheria of the world economic system needs developing countries' efforts on increasing competitive abilities of branches with high added value. And that is impossible without due state stimulating. Well-timed focus on key settlement of manufactures of new technological mode, which gives lagging countries opportunities to shoot forward in times of replacement of dominating pattern and accompanying structural crises of developed countries' economies is of a special importance.

Due determination of priority sectors of national resources accumulation on well-timed development of key technologies of the modern technological mode gave the Asian tigers opportunities to escape from dependence. At present China, India and Brazil are trying to do the same, developing key aspects of a new technological mode – informational, microbiological, space, nuclear and other technologies. It provides them not only with anticipatory development of new manufactures but also reproduction of traditional ones on the base of new technologies, engaging transnational capital in transit of production capacities to their territories. Due to combination of active scientific and technological policy of leading technologies development and industrial policy of engaging modernized traditional

manufactures, an effect of anticipatory development is achieved, and that permits successfully developing countries to drive to the core of economic system.

Unlike the usual strategy of overtaking development, securing nonequivalent exchange between the core and the periphery, the policy of anticipatory development gives chances to escape the trap of periphery dependence and enter the way of independent successful social and economic development. But then developing countries should have national institutions of development, containing mechanisms of active monetary, investment, innovation, industrial and social policies. Ability to congregate national resources is also essential; and that is impossible without national sovereignty in the sphere of nature management and financial police. Countries, lacking instruments of independent trade and financial policy and lacking control over their natural resources, have no sources of competitive abilities increase of national economy. They have to cope with strengthening of their dependent position.

In conditions of modern scientific and technical progress it is impossible and hopeless to try and shut off from the rest of the world. Economic, scientific and technological, educational and cultural activities are carried out today in global scale. The policy of increasing of competitive abilities of national economy should be carried out likewise. Excessive shut off in modern conditions will lead to lag and loss of advantages. At the same time each state has all chances of using its sovereignty, providing alterations of global competition rules on national market in favor of its citizens and business, then engagement of transnational capital who not contradict national interests but provide social and economic development.

Methods of such alterations are well known. They contain principles of national control over natural resources and key industrial branches securing, protection of national market and national manufacturers' interests on foreign one, realization of active policy of scientific and technical progress and investment activity stimulating, social guarantees securing, support of state monopoly on monetary system control and emission income management, currency control realization, development of enterprises which can be national leaders, successfully competitive on world market, providing conditions for national economy competitive abilities increase and economic growth. In the conclusive part of the report these methods are rendered concretized in relation to solving problems and working out strategies of development for modern Russian economy.

The regularities characterized above reflect economic development of leading countries that set the path for development of the world economy. Standing at the frontier of science and technology progress, forming the reproduction outlines of new technological modes, they play the role of 'locomotives' of global economic development while enjoying therewith associated advantages. Other countries have to imitate the achievements of the world leaders or use their results in exchange for their natural resources or cheap labor. This exchange is not equivalent – the leading countries realize their technological superiority, impose the rules of international economic cooperation that are convenient and beneficial for them, and globally keep the intellectual rent to themselves. At the same time, in the course of every structural crisis of world economy accompanied by the process of replacement of the

dominating technological modes, new opportunities of economic growth evolve. The countries that had led the previous period face devaluation of capital and qualification employed in the fields of the out-of-date technological mode, whereas the countries that were able to create some capacities for forming industrial technology systems of the new technology mode become the centers that get hold of the capital released by the out-of-date industries. Each time the change of dominating technological modes is accompanied by significant shifts in international division of labor and renewal of the most prosperous companies and leading countries.

Thus, the expansion of the modern TM brought about a significant renewal of the list of 500 major companies annually published by Financial Times. One-third of them fall onto companies working in branches of the modern TM. As recently as a quarter of a century ago most of them were not presented on the market, yet today their share is about two-thirds of the total value of the world's leading companies. Such is the dynamics of structural changes in modern economy – companies and countries riding another technological wave get a huge intellectual rent as it expands further and further. Up to now, even at growth stage of the modern TM, in its most dynamically growing branches, the cost-effectiveness many times exceeds the average in economy. For instance, each dollar invested in space communications or television systems yields a 7-dollar profit, and the growth rate of space communications market exceeds 25% per year [5].

The scale of the key factor efficiency in the modern TM is evidenced by the following estimation. In 1999 the world produced polysilicon ingots to the amount of 800 Mio dollars. Thin round slices made of them, carrying tens of integrated circuits each, already cost 6 billion dollars. Ready chips (microprocessors, microchips, controllers, etc) cut from the slices and inserted into chassis with contacts cost approximately 150 billion dollars; and the final products – computers into which these microchips are integrated – cost around 750 billion dollars. That is, one dollar invested in electronics silicon production eventually results in thousand-fold increase of added value [3]. This is the advantage in income generation enjoyed by those who possess the key factor of the dominating TM.

At present, the new technological mode is being established. Today key lines of the long run economic growth are formed. Their timely development provides relative advantages that will shape geopolitical competition until up to the middle of the 21st century. Already now the R&D carried out in the perspective directions of the new TM is highly efficient. Even in such traditionally unprofitable field as agriculture their cost-effectiveness exceeds 50% [5].

Among the factors determining national competitive advantages, alongside with the development of the key industrial and technical systems of the new technological mode characterized above, are education and public health care; advancement of science; availability and filling of information environment; conditions for constructive and creative self-actualization for every person; purity of environment and life of quality. The crucial importance of technological progress and the ability to adopt new technologies predetermines the growing role of the human factor in organization of production. The countries unable to provide universal tertiary education, advancement of science and the quality of information

environment will have to play the role of raw and human material supplier to transnational companies of the developed countries that will accumulate global intellectual potential.

Objectively, national interests of each country dictate corresponding priorities of international cooperation. In those countries that claim self-reliance the processes of opening national banks, attraction of foreign capital and international cooperation are controlled nationally and combined with protection of the internal market, limitation of foreign investments in spheres that are vital to realization of national interests; support of inland producers and encouragement of their competitive growth, rearing of their own leading companies that will defy competition and play the role of 'locomotives' of the national economy on the world market scale. At the same time, the more the national elite of a country recognizes the advantages of its economy and its national interests, the more opportunities it has for an efficient use of international production cooperation to the benefit of its own socioeconomic development.

The bridging of the constantly reproducing itself, huge technological gap between the core and the periphery of the world economic system requires efforts on the part of the developing countries to raise competitive ability of industries with high added value, which is impossible without corresponding measures of government priming. Especially important is a well-timed concentration of national resources on the development of the key industries of the new technological mode which will enable the less developed countries to gain the lead during the periods of substitution of the dominating technological modes and the structural economic crises in the developed countries that accompany them. As is correctly stated in [13], the only way out of the 'lagging hole' is not a pursuit development but generation of new paths of development through concentration of intellectual capital.

Correct identification of priority areas of concentration of national resources on mastering key technologies of the modern technological mode allowed the Asian tigers – Japan, South Korea and Taiwan – to break the periphery dependence. Today China, India and Brazil follow the same way mastering key growth opportunities of both the modern and the new technological modes. This enables them not only to lead in the development of new productions but also to reproduce the traditional ones on the new technological basis attracting transnational investments with higher economic efficiency. Due to the combination of active technological and industrial policy, goal-oriented regulation of foreign economic relations, there is an effect of faster growth which allows the more successful countries to move from periphery to the core of the world economic system.

Unlike the economic liberalization strategy imposed by the IMF, which supports the non-equivalent exchange between the core and the periphery, the policy of priority development yields an opportunity to escape from the trap of periphery dependence and follow the path of its own independent and successful socioeconomic development. But in order to achieve this, the developing countries must have national development institutes including mechanisms of active monetary, investment, innovation, industrial and social policies. They also need to be able to concentrate national resources, which is impossible without national sovereignty in the spheres of natural management and financial policy.

The secret of any economic miracle lies in correct identification and implementation of development priorities, the latter giving an opportunity to ride another wave of economic growth. But in order to do this, it is important to create scientific information, production technology and intellectual capacity for the development of perspective technologies. Further expansion of use of the latter on the world market scale gives their owners an opportunity of ultra-speed growth of production and income. But this is preceded by a more or less extended period of accumulation of advantages in an unfavorable economic environment. Such accumulation implies participation of governmental financial institutes capable of overcoming the threshold of simultaneous costs and making profitless investments during a long time period. Implementation of the liberal strategy in developing countries is unpromising for it eliminates the possibility of such development institutes. This can be clearly seen by the results of this strategy in this country.

Threats to evolution of Russian economy

From the very beginning of market reforms Russia, like other former Soviet republics, gave up sovereignty in economic policy, transferring its carrying out to international institutions. Russian authorities yielded to pressure of G7, threatening with economic sanctions in case of refusal from assuming responsibility for the external Soviet debt with due consequences in the sphere of macroeconomic policy, carrying out of which was nearly transferred to the International Monetary Fund. G7 provided Russia no delays in paying the debt instruments without approval of the IMF. That permitted it to impose a consequent policy on Russia. It was realized on the base of standard methods of the “Washington consensus” – of modern ideology of neocolonial rule of the core of the world economic system over its peripheria – and it included: destruction of national institutions of economic regulation, its liberalization, privatization of state property, attachment of money creation to world currency acquisition. Results of the policy were typical as well.

Fast degradation of research-and-production potential doomed Russia’s movement towards peripheria of the world economic system. Raw-materials specialization, very low remuneration of labor, outflow of capital and brain drain, washout of national income through external debt service, loss of sovereignty in economic policy realization, determined by the IMF – all these features of an outlying country are typical for Russian economy today. According to indices of average life interval, share of labor remuneration in gross national product, indices of man capital development, share of brain drain in fund of accumulation Russia has degraded to the level of backward countries. But for relatively high level of education of population and labor qualification, existing scientific and technical advance, nuclear-missile defense shield, the degradation to the level of peripheria of the world economic system and loss of independent economic development would have been irreversible.

Conservation of existing tendencies of scientific and technical advance degradation during several more years would mean securing of outlying position of Russian economy. It

will be caused by traps of nonequivalent foreign-economy exchanges, in which Russia is entrapped even today.

Occurred structural deformation of Russian economy has led it to a trap of raw-material specialization. It is seen clearly in the circumstances of hyper increase of impotency of raw-material branches, oriented on export, and degradation of production of national market oriented consumer commodities. Along with drastic decrease of science intensive output, these tendencies doom Russian economy to nonequivalent external economy exchange and growth of technological lag. Exporting raw materials and importing complete products, Russia loses irreproducible natural rent, changing it to intellectual rent and therefore financing scientific and technical progress and economic growth abroad.

Chaotic breaking of Russian economy structure in the process of radical reforms carrying out, led to disintegration and break-up of once whole technological rows into independent contents, partly built in external reproduction outlines. Loss of reproduction integrity, destruction of main components of scientific and technical potential, drastic decrease of scientific researches scale, dominating of external reproduction outlines in the economic system, does not mean only the loss of economic independence of the country but also disappearance of internal sources of stable economic growth, make economy more dependant from world market conjecture and set serious external limits on its development. This policy resulted in outflow of about one trillion dollars of capital, one half of which was removed by the state itself.

Entrapping of Russian economy due to typical for outlying economy nonequivalent external economic exchange, large scale ablation of its national wealth, and rapid degradation of its scientific and technical potential are consequences of realized economic policy, which lead to breach of main reproduction outlines and economic ties. Structural peculiarities of Russian economy, neglect and self-rapture of the state from responsibility for its regulation, provoked processes of disintegration and increase of chaos. Refusal from structural, scientific and technical, industrial, investments and from the majority of other components of state economic policy and limitation of the latter by typical for market balance methods of macroeconomic stabilization led to no adequate result in such unbalanced situation. In circumstances of disproportions, typical to Russian economy, simplification of economic policy and its limitation to postulates of the "Washington consensus" inevitably led to destruction of main reproduction outlines of economy and its break-up into independent parts.

Along with above characterized split of economy into externally and internally oriented reproduction outlines, as a result of carried out macroeconomic policy, diffusion of financial and industrial spheres occurred. The first one – the sphere of capital circulation – is characterized by super profits and high speed of currency circulation, relatively low risks. The second one – producing sphere – is characterized by low profits and low speed of currency circulation, high risks due to uncertainty of property relations, unacceptable state of financial affairs of the majority of enterprises and overall degradation of manufacturing potential. Besides manufacturing sphere split into export oriented raw materials sector, consuming natural rent and possessing stable position due to re-orientation on foreign market, and the

rest of economy, oriented on national market and characterized by very low profitability and low paying capacity. Territorial diffusion of economy is increasing – as a result of chaotic split of economic links and anticipatory growth of transport service prices, destruction of existing cooperation, specialization of manufacture and re-orientation of certain regions of country on foreign markets.

Disintegration of economy is the consequence of the process of national wealth redistribution through means of privatization, financial pyramids natural resources export. Intensity of such redistribution was extremely high, annually amounting half of accumulation fund of the country appropriated by oligarchic clans and removed from the country. Squeeze of prices on fuel and raw-material goods led to flight of capital from manufacturing industry, agriculture and construction. The latters became unprofitable, lost working capital, which escaped through price discrepancy and setting of too high interest rate for credits.

At present disintegration of Russian economy is supported by artificial overstating of profits of speculative operations, guaranteed by the state against a background of crisis, caused by tough monetary policy, liquidity and setting of too high prices on extremely monopolized fuel and energy and raw-material sectors of economy. Super profits from energy carriers export and raw-material goods do not transform into increase of investments and mainly stay abroad. Anticipatory growth of prices on fuel produce and construction materials going on during the recent 15 years, has undermined profitability of manufacturing industry, just normalized after financial collapse. Significant increase of real rate of rouble which happened during the same period decreased competitive abilities of Russian goods. Despite noticeable decrease of interest rates, they still exceed profitability of majority of Russian economy branches, while the on going emission of relatively profitable state obligations make the afflux of capital into manufacturing more complicated. As a result only enterprises of export-oriented raw-material sector have access to financial market resources.

In conditions of low profitability of the majority of branches due to price disproportion and in terms of unprofitability of more than one half of enterprises, it is hard to wait for stable manufacturing growth. It is extremely hard to move forward in creation of competitive midst and decriminalization of market in terms of demonetized economy and a biased state. As there is no currency control, the main part of income produces by economy is still removed abroad.

Transit to stable economic growth assumes creation of manufacturing crediting establishment, price disproportions elimination, as well as solution of problems of reintegration of economy, settlement of outlines of enlarged reproduction, many times increase of investment activity, as well as of innovation one.

Then decent investments, structural, industrial, scientific and technical, price and other policies – parts of economic state policy - are needed. Without its stirring up it will be unreal to eliminate *main threats* of economic development of the country:

drastic (in 1,5-2 times) decrease of research-and-production and resource potential of the country in the nearest decade due to mass retirement of capital stock;

degradation of scientific and technical potential, increasing technical lag in comparison with the world market demands, decrease of its competitive abilities;

worsening of quality of human potential due to decrease of living standards and education level

destruction of state system of social protection and basic social grantees provision;

loss of national control over strategic branches that form the structure of economy;

desorder of national financial system under the influence of uncontrolled flows of speculative capitals;

There are two possible strategies of economic policy, determining alternative ways of future development of the country, in the existing situation. The first one was being realized until now and is based on principles of the “Washington consensus”, used to “cleaning” of developing countries for free transit of international capital. The second is based on national interests and aims to create the most favorable conditions for restoration and development of national scientific-and-production potential and national wealth increase.

These two strategies have two corresponding scripts of future development. The first presumes development of existing tendencies of degradation of scientific-and-production and intellectual potential of the country and its final turning into raw-material peripheria of global market with disintegrated and externally controlled economy, demoralized population and split into confronting groups society. The second presumes fast reconstruction of existing scientific-and-production potential and its further development based on realization of competitive advantages of Russian economy and its modernization through large scale introduction of modern technologies, combining fast growth of manufacture, investments, labor payment and standards of life.

The peculiarities of the moment are in its crucial character. The choice of strategy will predetermine development of the country during several decades. It is connected with peculiarities of modern state of scientific-and-production potential. Now it allows to achieve if carrying out decent economic policy high speeds of growth of manufacturing (not less than 10% a year) due to utilization and modernization of existing facilities, but in several years avalanche-like retirement of old facilities and devaluation of capital removed abroad will bring economy to tough resource limits. That's why choice of the first strategy, predestining continuation of degradation tendencies of scientific-and-production potential, will inevitably lead to loss of main sources of modern economic growth and therefore internal abilities of independent development of Russian economy, strengthening raw-material specialization, with typical nonequivalent foreign market exchange and external dependence.

Tendencies and problems of economic development in Russia

Despite remarkable animation of economy of the recent years, its overall state is determined by anticipant sudden and continuous collapse of manufacture as well as of investments. By 1998 the level of manufacturing has decreased on 42.5% comparing with 1990 and investments in fixed capital – in 79%. Though there has benn a stable increase of gross national product since 1999, today it is hardly equal to the pre-reform period one. And is still less than in any country – member of G8, twice less than in India and four times less than

in China. At the same time the structure of industry has become worse – unlike in any developed country favouring manufacturing with high added value, in Russia gross national product has been increasing due to energy carriers export and growth of trade. The shares of fuel and energy complex and chemical and metallurgical complex continues to increase steadily in the structure of industry, while the share of machine-building decreases (see Application Fig.4). The most dramatic destruction took place in science intensive industry, investment and agricultural engineering, light industry, in producing industrial goods of national consumption, where the level of manufacturing decreased many times. The same happened to R&D sector.

Decrease of the amount of manufacturing was not yet accompanied by decline of gross capital formation of the same large scale. But level of deterioration of them exceeds 50% because of the five times decrease of investments in manufacture. At the same time the coefficient of renewal is less than 2%. This leads to an increasing technological degradation of Russian economy. An average equipment exceeds 20 years (see Application Fig.5).

Due to lack of direct investments and structure policy, technological shifts in Russia became of a distinctly regressive character and appeared in fast degradation of technologies. At the same time the most actual manufactures are the most regressive ones. As scientific and technological advance goes on, Russian has added 15 more years of lag to that of 10-25 years lag of the economy of the Soviet period if compared to leading technological level [12]. The most manufactures of finished commodities, enclosing the reproduction outline of modern technologies, are nearly phased out. Their decrease in manufactured goods amount exceeds that of the manufactured goods of other kind. Nearly total supplanting of such goods from the Russian market by their import analogues occurred. The shares of modern technologies in producing machine-building products has decreased from 33% in 1992 to 21% in 1998 [2]. The rise, which began after the default of 1998, hardly influenced production of goods concerned with modern technologies. They went on degrading, except for export-oriented military-industrial complex and IT. Fast destruction of modern technologies means destruction of technological base for stable economic growth, Russian economy backwardness continuation

In theory structural economic crisis is overpassed by application of technologies, introducing new industrial facilities, exploiting of which provides breakthrough in efficiency of economy and its upgrading up to a new stage of its development. If the crisis is going on normally decline of economic activities does not influence perspective industries in the conditions of new technologies, which possess potential for growth and are able to become “a locomotive” of future economic development of the country. On the contrary, at this time against a background of overall decline growth of manufacturing of brand new products, increase of investment and innovation activity in perspective fields. “Constractive destruction” of existing technology pattern occurs, as well as its modernization based on new technological means. This creates conditions for economic growth. At the same time cross-flow of capital from old manufactures to new ones happens, as it becomes more risky to continue investing old manufactures than investing innovations [16].

The economic crisis in Russia differs drastically from classic mechanism of national economy renovation. Decline of production in high-tech branches appeared to be much more than average one in industry. Besides decline in production depends on technical level of the branch. The higher is the level, the greater is decline. Innovational activity of enterprises decreased repeatedly. In the late 80-s the share of industrial plants, developing and introducing innovations in the USSR was about 2/3. After thoroughgoing reforms the share decreased to 10-15% (the share exceeds 80% in developed countries) [17]. Intensity of innovation activities in manufacturing industry declined to 1%, while the level of innovation products was about 10% [12]. In 1998 labour productivity (according to gross national product) decreased on one third comparing with that of 1990. In 2005 the level of 1990 was a bit exceeded due to growth of gross national product, caused by high world prices on carbohydrates. However, this increase is ephemeral and it will be lost in case of another collapse of prices or step-by-step rise in prices on energy carriers under the West countries pressure.

The most serious destructions happened to scientific and technical potential of the country, while scientific and technical potential is the key factor for economic growth. The amount of R&D expenditure decreased more than 10 times in absolute terms and three times in reference to gross national product. (see Application Fig.6), which caused drastic decrease of competitive ability of national economy and loss of a significant part of economic growth potential. Taking into account the fact that scientific and technical potential plays a key role in national income increase, scientific and technical potential possible degradation leads to irreversible loss of future social and economic development opportunities. Further reduction of comparative ability of Russian economy was predetermined by its type of innovation system – it fell behind from developed countries according to all indices of innovation activity (see Application Fig.7).

Technological lag of Russian economy is seen clearly in the structure of national wealth. Russian national wealth per person is the largest in the world, but its reproducible capital per person is much less than that of the USA or the EU, and its level of production is many times less than that of developed countries (see Application Fig.8).

Thus, one can see an obvious pathology in the crisis of Russian economy. It is characterized by chaotic destruction of economic system, its degradation and primitivization. The crisis did not lead to renovation of manufacturing, based on brand new technologies. Recovery, which began after the bankruptcy of the state financial system in 1998, was mainly caused by conjecture factors. It was based on old technologies, which went on degrading. Economy split into relatively wealthy export-oriented sector of raw-materials and decreasing under the influence of import internal market oriented branch, which became more and more lagging in its technological and institutional aspects from foreign competitors and continued to destroy. The first sector became more and more secluded on the world market, isolating itself from the second one. As a result raw material export profit as well as that of energy carriers stayed abroad only insignificantly transforming into demand for nationally produced goods. The share of increase of competitive ability in the country in gross national product has been decreasing. It was 5.9% in 1999 while only 2.1 in 2004. At the same time the share of

increase of export in growth of GDP increased from 5% to 5.1% accordingly. Russian economy becomes more and more primitive, assuming functions of a raw materials-producing appendage of the EU and China and losing mechanisms of independent reproduction.

Defusion of economy is strengthened in the process of reproduction of existing patterns of added value redistribution between branches. According to data price discrepancy and understated national currency rate internal sector passes to export-oriented one and trade sector more than a half added value, produced by itself [7; p. 25]. Monetary authorities in their turn withdraw around 6% of gross national product from export-oriented sector and to Stabilization Fund abroad. More than five times excess of profit rate in the export-oriented sector in comparison with internal one reproduces and intensifies the gap between them, being reflected in more than double difference in key assets renovation intensity, investments and manpower resources bringing in potentialities.

The internal sector will go on degrading in existing circumstances of prevalent price proportions and capital outflow scale. It will subsidize export and outflow of the capital, though indirectly, until its potentialities of generating energy and labour costs are exhausted. As degradation of the internal sector will go on, cross-flows of added value, produced by it, will decrease and rate of economic growth will decrease accordingly (to 2-4% of gross national product growth by 2010 [18; p.9]). Drastic contraction of economic potential reproduction potentialities that is inevitable in such cases, will lead to contraction of internal and social sectors. As a result Russian economy will be entrapped by the raw-material market circumstances and will find itself being in the backyard of the world economy. This will mean low living standards stagnation for the majority of population, two-thirds of which will be deprived of self-actualization prospects and getting large personal income.

Under the influence of petrodollar inflow rouble exchange rate increases, and this decreases already unsatisfactory national manufactured goods competitive ability. National manufactured goods are already substituted by cheapening import. Growth of the latter exceeds growth of national goods manufacturing many times, and as a result the share of import in structure of trade resources of retailment increases, approaching to one half (see Application, Fig.9). Consistent state support of dollar along with lack of effective policy of national industry modernization only intensifies degradation of economy, stimulating further growth of raw-material export at the expense of living standards improvement and final demand.

To overwhelm tendencies of research-and-production potential degradation, drastic increase of innovation and investment activity is essential. To maintain just reproduction of capital stock it is necessary to increase investment 2 times and R&D expenditure five times. And it should be done in the nearest two-three years, as owing to incredible wear of outmoded production facilities up to half of them can retire until the end of the decade.

The existing mechanisms of investment activity are unable to solve the problem. The model of investment activity, prevalent in Russia, is characterized as low-powered, ineffective and primitive one. Neither stock market, nor banking system function properly or solve problems of savings accumulation or their transformation into investments. The major

investors are manufacturers themselves. Their share is more than 60% of total amount of non-state investments, including 28% that manufactures invest on account of profit. Investment activity has reduced so as to correspond only with the minimum technological needs of enterprises. Weight of long-term investments in total amount of investments is about 20% [19; p.381]. State has nearly stopped supporting investment processes and declined all responsibility for industry development, as to the new market institutions of providing enlarged reproduction (first of all – banking system and stock market) – they still have not been worked out yet.

Specificity of Russian banking system consists in its dysfunctionality. The majority of Russian commercial banks do not transfer savings into industry investments while that should be their main function. Russian commercial banks function in a kind of institutional vacuum as there is no access to credit resources, supply of which is artificially limited by monetary authorities. In absence of Central Bank procedures of refinancing the business activity, it is hard to hope that banking system will be able to provide necessary level of investment activity. Joint contributions of banks to investing key assets is not more than 10% [20]. The contribution of stock market is even smaller, as in Russia it maintains mainly financial speculators. It's small volume provides high vulnerability in case of speculator's assets attacks. Another vice of our stock market is its speculative character, which remains untouched despite increase of Russia securities rate. This combination of small volume and speculative character of Russian stock market makes a special vicious circle, limiting it to maintaining short-term speculative investments.

At the same time financial resources of enterprises, playing the key role in maintaining investment activity in economy are rather limited. Amortization covers only 2.2% of capital. Possibilities to finance investments at the expense of profit are also very small. Excluding export oriented branches of fuel and energy complex and metallurgical and chemical complex where profit rate is very high due to favorable economic conjectures profitability in industry is about 6% and this prevents financing enlarged reproduction of key assets. In 2005 one third of all enterprises in manufacturing industry, more than one quarter of construction organizations and 40% of agricultural organizations were unprofitable. As a result raw-material structure of economy was secured – the main part of capital investments into industry was focused in fuel and energy complex and metallurgical and chemical complex (see Application, Fig.10).

Low profitability in manufacturing industry and lack of opportunities of being credited for national market oriented enterprises are the main barriers on the way to modernization, effectiveness increase and growth of production volume. Financial resources accumulated by them are much smaller than the indices of wear and retirement of key assets, intensity of renovation, which is 1.4% [18; p.13].

Export oriented enterprises of fuel and energy complex and metallurgical and chemical complex chose to be credited by foreign sources even more decreasing potentialities of Russian banking system. Lack of credit resources for internal sector is combined with the policy of currency sterilization, held out by monetary authorities, based on withdrawal of currency from national market.

At the same time a significant part of half of industrial facilities can still be used in manufacturing in case of improvement of financial state of enterprises. According to different evaluations, potentialities of industrial growth based on utilization of existing facilities was not less than 35-40% at the beginning of the decade [21;p.84]. Today, potentialities are nearly exhausted and investments in development of industrial facilities, based on new technologies, are essential. Remaining scientific and technical potential allows to reconstruct and provide enlarged reproduction of key technologies of modern and new technological modes. But the time, which allows to solve the problems, is running out.

To get out of the raw-material trap becomes more and more complicated each year due to increasing global competition, in which Russia is losing. Potentialities are exhausting as the new technological mode of global economy is being structured and corresponding specialization of countries is going on. To get out of the trap, it is essential to change economic policy drastically. It should be based on national competition potentialities increase in major fields of new technological mode, taking into account global mechanisms of modern economic growth.

Monetary policy as the main cause of economic degradation

Paradoxes of monetary policy, carried out in Russia today, will probably become a part of economic history as the most absurd incidents: the larger are currency revenues from oil export, the less credit resources stay at the disposal of Russian enterprises, the larger are foreign investments, the less are possibilities for internal savings. The larger is the excess of budget revenue over budget expenses, the larger is internal state debt.

By the 1st of January of this year there has been 2.299 trillion of currency of monetary base in internal turnover and 5.245 trillion roubles of clear international reserves, accumulated by the Central Bank. Then clear inner assets of the Central Bank have been 2946 billion roubles. Thus, monetary authorities have withdrawn more than one half of issued currency from economic turnover into the Stabilization Fund and obligations. By the end of the year the correlation of withdrawn currency and currency left in the turnover will amount 3095 billion roubles and 4869 billion while international reserves will increase up to 7964 billion roubles [22]. In other words, one rouble works in Russian economy and two are reserved in foreign assets.

For reference we should say that in developed countries the correlation is quite the contrary – the amount of money base exceeds gold and exchange currency reserves many times (see Application, Fig.11). This means that monetary authorities artificially decrease the amount of monetary supply, even in comparison with the most conservative model of monetary policy known as the “currency board” (when a country strictly attaches amount of currency base to amount of currency reserves). Double decrease of the amount of monetary base against the amount of reserves income means corresponding limitation of money supply and potentialities of crediting of economic growth, increase of investments, growth of employment and income of population. Incapacity of monetary authorities to use petrodollars

befallen in Russian efficiently turns into high interest rates and difficulties in being crediting for enterprises.

During the recent years the Central Bank has been using the sole source of monetary issue – “increase of clear international reserves of monetary and credit authorities” [22], or, in other words, acquisition of foreign currency. In conditions of quantitative limits of monetary aggregates his policy lead to flow-out of currency in the major part of industry, oriented on national market, which due to lack of access to credits has to seek sources of development at the expense of decrease of remuneration of labor or to reduce manufacturing.

For example, in 2006 the upper limit of money supply encrease (aggregation M2) is estimated by the Central Bank as 28%. Money supply at the increase of currency reserves amounting about 100 billion dollars should be more than 2.5 trillion roubles, that can be equivalent to redouble of monetary base. Its real increase will be 796 billion roubles – the rest of monetary issue is sterilized by withdrawal to the Stabilization Fund 1.5 billion roubles of taxes, depositing and making obligations of the Bank of Russia 229 billion roubles and increase of norms of compulsory reserves on obligations of credit organizations for non-resident banks. Thus, the Central Bank has to withdraw about 1.7 trillion roubles from national market during a year, otherwise these money would be invested or directed on financing. *Then, it turns out, that while this policy is realized, the more currency income comes to Russia from oil export, the less money is left for national manufactures.*

Within the limits on increase of money supply, set by monetary authorities, not only increase of income, but also increase of export turns out to be useless for economic growth. As in case of currency issue reserves increase exceeding the upper limit of money supply limit set by the Central Bank it turns out that the more currency profit comes to the country, the more is sterilized. At the extent of income being transferred to oil and gas companies, money will be withdrawn from the state budget and banking system to be frozen in the Stabilization Fund and obligations of the Central Bank. *In other words, the more petrodollars will come to the country, the less money while provided for development of the branches of economy and budget sphere.*

Of Russian monetary authorities believe in linear dependence between inflation rate and that of money supply increase, taking into account speed of the turnover and the mount of produce as constants. That's why logic of their policy is based on quantitative limitations of money supply, that should moderate inflation. For example, taking into account comments of monetary authorities representatives, they really believe that double decrease of rate of increase of money supply will lead to double increase of inflation. This extremely simplified logic is far from economic reality, with its nonlinear and complicated feedbacks and uncertainty. It assumes without any proofs that current level of monetarization in Russian economy is optimal and should not be changed. As Russian minister of finance said – “the state of our economic system is so, that we can afford 27% of index of money supply at gross national product in 2006” [23]. And, according to this logic, excess of money supply over that amount should be withdrawn.

This discourse, based on primitive doctrine of vulgar monetarism is beneath criticism. Though increase of quantity of money in turnover exceeds 30% during the recent years, the level of monetarization of Russian economy is still insufficient. It is proved by persistent lack of credit resources for enterprises, which more and more often resort to credits abroad. According to government prognosis “the level of monetization of economy will increase from 28% of gross national product in 2005 to 34-39% in 2009, which is significantly less than that of such fast developing countries as India and China” [19].

Numerous researches, have proved lack of statistic significant dependence between inflation and level of monetization of economy [24] as well as curious consequences of unfounded policy of quantitative limitation of increase of money supply. The amount of currency of taxpayers withdrawn by government and removed abroad is equal to the amount on which they are credited to get back lacking money. At the same time, while government credits Russia tax payers at 2-3%, there they have to borrow money, withdrawn from them at 8-15%. Clear loss caused by the policy is about 5 billion dollars a year. And this is *the second paradox of the carried out macroeconomic policy – the more currency comes to economy, the more assets are removed abroad by the state.*

While such policy is carried out foreign investments turn out to be useless as well. As, according to the logic of “Main guidelines...”, the more capital is invested in acquisition of stocks of Russian enterprises by foreign investors, the more the increase of monetary reserves will be (as well as money issue at they increase), and the more will be sterilized by monetary authorities. At the same time, along with withdrawal of a significant part of tax proceeds of budget from economy to the Stabilization Fund, monetary authorities increase reserve demands for commercial banks and unnecessary state obligations, withdrawing from economic turnover free money resources. As a result, the internal state debt by the end of 2006 was amounting 1092 billion roubles, and during 2007 it will increase up to 1363 billion. In addition to unnecessary state obligations, the Central Bank also borrows money on market. In 9 months of 2006 along it borrowed 229 billion roubles, paying 4% to creditors for freezing funds [22]. Then it turns out that afflux of foreign speculative capital on the financial market will result in flow-out of money from its investment part. *It turns out that the more is the afflux of foreign investments, the less are the means of internal financing of investments and the more in the internal state debt.*

While such policy is carried out, Russia will never have its own full-fledged banking system. As the Central Bank limits toughly monetary supply and is not engaged in establishing a due system of re-financing of commercial banks, the growth of the latter is toughly limited by common limit of increase of money supply, set by monetary authorities. Their most prosperous clients, having achieved the level of international competitive ability, choose to be credited abroad. Small amount of operations of national banking sector converges. *That is how the forth paradox of the carried out policy appears – the more are currency incomes of Russian economy, the more limited are means of development of national banking system.*

Reasons of these paradoxes are concluded in the very mechanism of planning of monetary supply, dictated to us by the IMF, being unchanged from 1992, despite great losses it causes. The essence of the mechanism is annual planning of increase of money supply based on aiming to moderate inflation, on exogenously determined increase of gross national product and suppositions that the velocity of money is constant. At the same time government and the Central Bank possess no valid models for estimating dependence between inflation and money supply increase. Linear econometric models of dependence between money supply increase and inflation, used by monetary authorities analytics, are burdened with high autocorrelation and lack substantial sense. Limitation of all factors, producing inflation, to increase of money supply – is an extremely rude simplification, leading to constant undermonetization of Russian economy, which on its part leads to artificial decrease of investment potentialities and moderation of economic growth.

Russian government despite of due carrying out of anti-monopole, scientific and technical, investment policy, struggles with inflation using monetary methods, withdrawing nearly one quarter of revenue from taxes to the Stabilization Fund. Other factors are not taken into account by our authorities as they do not agree with vulgar version of monetary theory. They simplify it to linear dependence between increase of money and inflation rate. That's why while developed countries, which keep low inflation even if budget revenues are less than budget expenses, we have high inflation, though budget revenues exceed budget expenses. And no sacrifices, connected with quantitative limits of money supply increase (moderation of wages increase, investments and social cost increase) are of any help – monopolists and crime, who control markets with the connivance of biased state, keep on overpricing in conditions of any macroeconomic policy. On the contrary, decreasing final demand and worsening conditions of crediting of enterprises, oppressing innovation and investment activity this policy leads to decrease of goods supply and acceleration of money turnover, and that, according to the same basic identity of monetary theory, lead to increase of inflation.

That is how the fifth paradox of carried out monetary policy appears – the more money is sterilized by monetary authorities, the harder it is to moderate inflation.

Continuous decrease of manufacturing in 90-s and crisis in the majority of branches of manufacturing industry, building and agriculture – are the direct result of carried out policy of quantitative limitation of monetary supply. Only insignificant part of economic actors have access to credits. The latter are given at high interests and short-term. The majority of enterprises have to develop using only their own resources – the share of credits in financing of large and middle enterprises is not more than one fifth. For small enterprises credits are inaccessible.

Suffice it to say, that ratio of joint stock of banking sector to gross national product in Russia is fifth times less than in other countries of G8. Rates of its increase could be much higher, if the Central Bank and government created essential conditions. But sterilization operations held by monetary authorities lead to increase of interest rates and worsening of accessibility of credits. Moderating rates of re-finance on the level, increasing average

profitability of manufacturing, the Central Bank blocks development of the whole banking system, limiting money demand to short-term speculative operations and super profitable branches.

The share of bank credits in the structure of sources of financing capital investments stay insignificant in comparison with developed countries - 8-10%. For example, in the USA this index is 40%, in the EU – in average – 42-45%, in Japan – 65%. As it is estimated, 93% of Russian banks ca not give credits exceeding 10 million dollars. Lack of development of system of crediting of enterprises and lack of mechanisms of long-term crediting of manufacturing - are direct results of limiting policy of financial authorities.

Russian monetary authorities are concerned mainly with withdrawal of money from economy, monetary authorities of developed countries on the contrary manage monetary issue purposefully to meet the interests of social and economic development of their countries, directing it through state budget and forming long-term credit resources at the increase of state obligations.

The Bank of Japan has formed the resources meeting the needs of budget on 80% - the amount of state securities on the balance of the Bank of Japan , at which it issue yens, prove that.

The same picture can be seen in the USA. According to the FRS data, while the money supply is about 700 billion dollars (October 2002), state exchequer bonds which are on the balance of the Central Bank of the USA are nearly 600 billion dollars.

Striking primitivism of Russian monetary authorities policy, limiting it to purchase and sale of foreign currency, is especially obvious at the backward of monetary policy of developed countries, which is based on interests of national economies development. Thus, the main aims of the FRS of the USA, are first of all maintenance of long-term growth of monetary aggregates with the account of manufacturing increase potential; providing moderate long-term interest rates, growth of employment.

Unlike developed countries, using state monopoly on monetary issue for crediting economic growth and financing state expenses, Russian monetary authorities refuse the country in both. Benefits go to exporters, using understated rouble rate for getting super profits from removal of cheap natural resources, foreign investors, buying cheap property rights on Russian objects, and financial systems of the USA and the EU, engaging nearly free Russian currency reserves for crediting their deficit.

Instead of carrying out tough anti-monopole policy state limits money increase in economy, decreasing final demand and potentialities of manufacturing growth. As a result depressive state of affairs and degradation of branches, oriented on national market are strengthened and tens of millions of people lose any opportunities to increase income, mass poverty turns to be continuous. Only highly monopolized enterprises and services are successful, and so are export-oriented ones.

The first, due to systematic overpricing provide refinancing, necessary for reproduction at the expense of consumers. The latter – due to stable afflux of currency and foreign credits engagement. The rest of the manufactures, oriented on national market, suffocates with

continuous lack of circulating assets during all these years, lacking possibilities of self-dependant refinancing of their own activity due to low profitability.

As a result of carried out monetary and financial policy economy lost a significant part of manufacturing and investment potential, outflow of capital exceeded one half of trillion dollars, degradation of economic structure of the country, accompanied by strengthening of dominating position of raw-material and monopolized branches occurred. Russia could have possessed double more gross national product and thrice more investments, more progressive structure of economy, if the Central Bank had met its chief goal – use of state monopoly on monetary supply for economic growth crediting.

Economic growth policy

In the existing circumstances, it will be possible to achieve stable economic growth and well-being of society only basing on concentration of existing resources on breaking directions of a new technological mode forming, decriminalization of market and providing fair competition, multiple increase of innovation and investment activity, fundamental improvement of state regulation quality, increase of labor, creative and business energy of people. Despite great destructions, Russian economy still possesses great research-and-production potential and sufficient resources for overwhelming tendencies of its degradation at the expense of intensification of internal potentialities and competitive abilities. First of all, these are:

- high level of education of population and spiritual traditions, orienting people on creation, social justice and partnership, self-actualization of personality in the interests of society;

- developed scientific and industrial potential, existing of mature manufacturing and technological structure in a number of directions of modern and up-to-date technological modes;

- presence of own scientific schools and unique leading technologies, practical application of which can provide development of competitive enterprises in global market scale;

- significant scale of free manufacturing facilities in manufacturing industry, which provide producing goods with high added value;

- rich natural resources, supplying the major part of national demand for raw-materials and energy carriers;

- significant currency reserves, providing increasing monetary supply consistently and widening using roubles in international accounts, re-monetizing Russian economy;

- large territory and capacious national market, providing wide variety of vital functions and needs of population;

- large amount of savings – their engagement in economic turnover can significantly increase the level of investment activity;

The amount of appearing and accumulated in Russian economy savings is quite sufficient for providing double increase of capital investments, essential for entering the regime of simple reproduction of main assets in the real sector of economy. Thus, in 2004 gross national savings were 32.5% of gross national product, while investments were only 21.6% [8; p.78]. Nearly one quarter of tax yield of federal budget is accumulated in the Stabilization Fund, the amount of which will achieve 13% of gross national product by the end of the following year. Besides, national currency held by citizens and amounting 50 billion dollars should be taken into account as well. Moreover, due illegal outflow of capital, Russian economy loses 20-25 billion dollars of potential investments annually. Potential of Russian economy re-monetization remains unrealized – there are three roubles tied up in monetary authorities' reserves on one rouble circulating into economy.

Thus, joint investment potential existing in Russian economy is realized on less than one third, 2/3 of accumulated savings are tied up or removed from the country. In case of taking into account capital removed abroad (according to competent accounts the amount is more than 600 billion dollars), investment resources withdrawn from Russian economy increase current annual amount of investments.

To double investment activity the new economic policy is necessary. The sense of economic policy of a state should be in actualization of existing possibilities of investment activity increase, drawing up of mechanisms of their realization in the system of concrete measures on increasing national economy competitiveness and its transit to stable growth on modern technological base.

Researches on state of existing research-and-production potential evidence that there are objective presuppositions for fast and stable development of Russian economy in middle terms with rate not less than 10% of gross national product and up to 25% of increase of manufacturing capital investments based on intensification of its competitive abilities and investment potentialities [25].

Taking into account present state of Russia economy and its potentialities of development in conditions of modern global competition the following main directions of economic policy of the state may be introduced, the directions, which should be carried out to realize the existing potential of growth of Russian economy.

1) Providing favorable macroeconomic conditions for growth of manufacturing and investments, including:

- decrease of interest rates and creation of mechanisms of refinancing of manufacturing activity, making monetary supply concordant to money demand of manufacturers;

- decrease of taxes on industrial activity and wages, release from taxation incomes of enterprises, directed on investments for development of manufacturing, carrying out of R&D work and exploration of new technologies;

- support of exchange rate of rouble and customs-tariff on the level, providing competitiveness of perspective and socially valuable branches of Russian economy;

- regulation of prices on services of natural monopolies and production of highly monopolized branches of economy in order to prevent inflation of expenses, biases based on

monopole position on the market and provision of favorable price proportions for manufacturing industry, agriculture, construction.

2) Creation of conditions for development of mechanisms of fair competition and intensification of business activity:

decriminalization of economic relations;

intensification of antimonopoly regulations;

regulation of processes of pricing and elimination of all forms of price discrimination of purchases, suppression of agreements meant to set too high prices;

elimination of excessive bureaucratic barriers on development of business activity;

providing full-fledged protection of legally obtained property rights.

3) Multiple increase of investment and innovation activity, structural reorganization of the Russian economy based on large scale spread of modern technologies:

forming procedures of choice and mechanisms of realization of priorities of structural reorganization of economy based on anticipatory development of the new technological mode, creation of modern manufacturing and technological structures with high potential of growth on the world market;

all possible stimulating of scientific and technical progress, including restoration of pre-reform level of budget financing of scientific researches, release of expenses of enterprises on R&D work from taxation, development of purposeful scientific and technical programs, providing state support for innovation activity on perspective directions of development of economy;

fast intensification of activity of institutions of development, including the Bank of development, able to provide engagement of investments in development of manufacturing sphere with the help of state guarantees, credit resources of state banks, forming of channels of refinancing of manufacturing investments with the aid of the Central Bank;

taking effective measures to stop illegal outflow of capital;

creation of modern informational infrastructure of R&D work and business activity;

providing of effective protection of immaterial property rights, support of import of new technologies and protection of Russian intellectual property abroad.

4) Anticipatory increase of labor remuneration, its relative and absolute levels, overcoming of forced unemployment:

increase of minimal amount of labor remuneration up to the living wage level;

strengthen of state regulation of labor-market, elimination of attempts of its monopolization by businessmen;

taking measures on converting shadow employment into legal path;

improvement of branch, professional and qualification structures of employees in connection with realization of complex programs of creation and preservation of work places, providing tax stimulating of the activity;

creation of effective mechanism of support of disengaged employees and unemployed in employment, direct and active cooperation of placement service and heads of enterprises and organizations;

support of small-scale and middle-scale business, traditional crafts, public enterprises and cooperative societies;

support of employment among socially vulnerable groups of population, as well as employment of young people, just entering labor-market;

development of institutions of social partnership, increase of importance of roles of three-power committees, enlargement of rights of employees to take part in administering enterprises.

Transfer of the beginning animation of economy into the regime of stable economic growth supposes formation of due macroeconomic growth, providing profitability of increase of industrial activity and investments in development of manufacturing. These conditions include normalization of system of money circulation and forming mechanisms of manufacturing activity crediting, decrease of interest rates and development of institutions of financing investments for development of manufacturing, decrease of taxation on manufacturing and investment activity, correction of price disproportions, protection of national market from unfair competition of importers.

First of all, main causes of demonetization of economy should be eliminated. To make that, it is essential to abandon unfounded policy of quantitative regulation of money supply and begin regulating rates of refinancing – with its continuous decrease to the level, not exceeding the average norm of profitability of the industrial sphere. The level of monetary supply should be made consistent to forming demand for credit resources of manufacturers. Correspondingly it is essential to change absurd policy of money creation at increase of currency reserves for flexible money supply, based on need of satisfaction of money demand of manufacturers, and using for those purposes mechanism of refinancing of commercial banks on security of promissory notes of solvent industrial enterprises. It requires from the Central Bank organization of monitoring of solvency of large and middle enterprises and providing transparency of its issue policy, making it consistent with aims of re-monetization of economy. In its turn, access to credit resources of the Central Bank will require from enterprises increase of transparency and effectiveness of activity, will promote their conversion in accordance with requirements of increase of competitiveness.

In case of such organization of monetary supply policy the main function of money issue – crediting of economic growth – is realized. Decreasing interest rates, the Central Bank stimulates growth of economic activity; increasing them – toughens requirements for economic effectiveness. It gives possibilities to carry out a flexible monetary and credit policy in accordance with aims and priorities of the economic policy of the state.

Secondly, instead of irrational extrusion of money from the country, forming of mechanisms of long-term cheap crediting should begin, transforming for that purpose the Stabilization Fund into the Budget of development and creating full-fledged institutions of development.

Re-orientation of policy of monetary supply to refinancing of manufacturing activity waives problems of sterilization of “excessive” money supply – due regulation of interest rates provides its tying in crediting of manufacturing.

As a result of carrying out of the proposed measures policy of monetary supply will become consistent to well-founded demand for money in order to support maximal economic activity and crediting of economic growth. Combination of state control over money issue and purposeful regulation of monetary flows will provide keeping low inflation and low interest rates, normalization of payment circulation, development of financial state of industrial enterprises and increase of investment activity.

Creation of Russian investment system

Taking into account present state of Russian financial system as the main mechanism of providing increase of investment activity it is advisable to use the system of state banks of development. Other mechanisms of providing investment activity, first of all – private banks and stock market, can be used as additional ones. In future, as the growth of manufacturing and investments, of savings, as well as development of market infrastructure will go on, their significance will increase. But, taking into account undeveloped state of commercial banks and stock market, no mechanism of generating investments other than the system of state banks of development, will be able to provide a solution for the problem of triple increase of investment activity in the nearest future.

State banking system should compensate lack of effective market mechanism in- and inter-branch motion of capital. For that purpose it should combine the ability to concentrate investments in perspective branches of economy. This combination is achieved by due construction system of state institutions of development, consisting of the Russian bank of development, accomplishing the task of engaging investments in development of priority directions of economic growth, and particularized banks of development, providing maintenance of necessary level of investment activity in due branches of Russian economy. Thus, such banks are necessary for: crediting export of goods with high added value, investment and military and technical cooperation abroad; engagement of investments in development of agriculture; crediting small-scale business and house-building. Each of these spheres has definite specification, hardening engagement of crediting on market terms.

Formally, some of these banks – the Russian bank of development, Rosagrobank, Investment bank and others have been established, but none of them has ever worked as an institution of development. For that they should be built in due system of organization of financial flows. Such system should include mechanisms of refinancing of banks of development, procedures of choice of priority direction of economic growth, flexible technologies of monetary supply providing their realization and reliable control over effectiveness of use of provided credits.

The structure of distribution of savings, existing in Russia at present, provides to realize both mechanisms of financing if institutions of development known from international

experience: based on savings, as well as using credit resources of the Central Bank. After the financial collapse of 1998 the main part of organized savings of people is concentrated in the Sberbank, which is controlled by federal government. The part of credit resources of Sberbank may be engaged in deposits in banks of development and be placed in investment projects, realizing priority directions of development of economy.

Crediting of banks of development through centralized procedures of monetary supply does not of course mean restoration of the administrative technology of distribution of capital investments. The centralized procedure of credit emission regulation or distribution of savings organized under control of the state is limited to setting proportions of distribution of joint investment resources of state financial system between banks of development in concordance with priorities of economic growth and aims of maintenance of investment activity. Investment decisions in their turn are made by banks of development independently with keeping all market criteria of payback and reliability of concordant investment projects.

There is a strong need for intensification of the state *investment policy*, including:

- restoration of the Budget of development and the institution of state guarantees concerning engaging of credits for financing priority investment projects, imposing functions of its carrying out on the Bank of development;

- forming a state investment program, based on priority directions of structural reorganization of economy with consideration of new perspective technologies;

- realization of inventory of discharging duties of investors, who acquired stocks of privatized enterprises on terms of investment competitions with recognition of void bargains, on which obligations are not discharged;

- cessation of practice of giving state guarantees at financing foreign concerned credits in case of presence of similar national production, giving state guarantees on conditions of filling of due investment projects by purchases of national facilities.

All in all the proposed system will function as follows. On macro level policy of monetary supply orients on providing industrial enterprises' demand on money while the level of macroeconomic activity is wishful and regulated with interest rates. At the same time organization of monetary supply is held by the Central Bank through the channels providing refinancing of current manufacturing activity (with the use of technologies of crediting of commercial banks on the security of industrial enterprises), investments in main assets with a view of modernization and expansion of production (with the help of banks of development), foreign-economic activity (by acquisition of foreign currency). Together with routine procedures of refinancing current activity of commercial banks, for support of increase of long-term investments monetary authorities organize two pattern of monetary supply: The Central Bank – banks of development – enterprises; savings of population – Sberbank – banks of development – enterprises. Thus, the major part of accumulated and newly produced monetary resources transforms into crediting of manufacturing and investments advancing economic growth.

On micro level, thus, at expense of crediting of investment projects in priority directions of economic growth and socially valuable activities expansion of competitive and

perspective production is provided. The aim of banks of development is not financing administratively set investment projects, but stimulating investment activity in perspective directions of economic growth. If due organized this process can bring 2-3 roubles of private investors for 1 rouble deposited with the help of banks of development into the priority project. At present conditions in Russia commercial banks, dealing with enterprises of real sector will be natural partners of banks of development. Taking part in financing investment projects in priority directions of economic growth, supported by banks of development, they thus enlarge their client base, assisting development of partner-enterprises.

Thus, the advised system of maintenance of investment activity will stimulate growth of competitive financial and industrial structures. Conversion of banking system will get a strong impulse towards re-orientation on dealing with the real sector. Little by little disintegration of Russian economy will be overwhelmed, normal coordination between financial sphere and the real sector in providing enlarged reproduction of economic activity will be restored. Financial and industrial system, oriented on economic growth, combining elements of positive international experience of organization of fast economic growth as well of national experience of rapid economic development periods will be formed.

Present state of tax and budget system is characterized by excessive taxation of labor, double under-financing of the social sphere, science and functions of development, as well as great and stable excess of budget revenues over budget expenses, accompanied with excessive differentiation of budget expenses per person in different regions of the country, the majority of which does not have enough money to provide social guarantees. To overwhelm the disproportions it is essential to decrease tax burden and rationalize the system of taxation, drastic increase of effectiveness of using non-tax sources of income, as well as restoration of the principle of balance of revenues and expenses of the budget are needed, while the latter should be formed on the base of program and purposeful approach.

Tax reforms should assist: decrease of total tax burden of socially valuable activity; transit of burden of taxation from manufacturing and labor activity to consuming and rent payments; freedom from taxes for a part of profit, directed on development of enterprises and new technologies, R&D, replenishment of circulating assets and forming of reserves; simplification of the tax system; redistribution of burden of taxation of population from the poor to people with high or super income. With a view to stimulate animation of manufacturing tax credits for enterprises, expanding their production and increasing investments should be provided, and a methodic of rapid amortization should be introduced.

Non-tax revenue, excise-duties and taxes on social and ecological harmful activities in aggregate can be equal to one half of budget revenues. Realization of these measures of increasing budget revenues not connected with taxation on socially valuable manufacturing activity, will allow to carry out the wishful decrease of taxes while state revenues will be increased. The top-priority ones are:

rationalization of mechanisms of withdrawal of natural rent from exploitation of natural resources entrails into the state budget, as well as exploitation of natural environment

with commercial views (payments for accordance of radio frequencies, air space, exploitation of land, recreation natural resources and etc.);

flexible use of export tariffs on outflow of raw-materials with views of withdrawal of natural rent from exported natural resources;

forming a full-fledged system of payments for pollution of environment:

placing all revenues of the Central Bank to the account of the state budget excluding state-established norms of forming of its own funds and reserves;

regulation of effect of imputed taxes on small-scale business;

drastic increase of effective usage of state property at the expense of increase of responsibility and transparency of work of state appointed executives, organization of system of planning and accounting in work of enterprises of the state sector;

suppression of “grey” import and smuggling;

Great potentialities of increasing budget revenues are connected with cessation of illegal outflow of capital. Accountable loses of tax proceeds from currency gain that does not recover in the country, fake import operations, connected with use of transfer prices at accounts with offshore zones, reach one third of budget revenues.

Enlargement of revenue base of the budget at the expense of taxation on natural rent allows to increase effectiveness of tax system drastically, strengthening its stimulating role and decreasing its fiscal burden on labor and manufacturing. Including:

to abolish tax on added value, characterized by high inflation capacity, high expenses on administrating, mass biases and low effectiveness;

to restore progressive scale of income-tax with simultaneous release from it incomes that are lower than the living wage level;

to substitute social tax by insurance payments – that will be concordant to the sense of pension and medical provisions.

Simultaneously with rationalization of the system of taxation and enlargement of revenue base of the state budget it is essential to assume measures increasing effectiveness of the system of state expenses drastically. The budget policy should be formed on the base of a purposeful and program approach with observance of norms of financing social sphere, education, science and culture prescribed by law. Then recently abolished norms of state budget expenses on science (not less than 4% of federal budget supply) should be restored, as well as norms concerning financing of education and culture, setting them on the level of 8% and 3% of joint budget accordingly. Minimal expenses on health protection should be fixed on the level of 5% of gross national product. Normative expenses on national defense (up to 3% of gross national product) and national safety can be set in the same way.

Budget policy of the state should be made concordant to substantial aims of social and economic development of the country. Principles of state budget forming should be revised in accordance to general logic of the system of regulation of economy, oriented on development. Dominating of aims of development should be supported by due technology of budget planning. Its working out should be based on set by statute-established norms, defining level of budget expenses on according directions, as well as program and purposeful principle of

planning and executing of expenses. At the same time, expenses on science and scientific and technical advance stimulating should be priority ones, as well as that on education, national safety, which are the base of stable future development.

Resources, accumulated in the Stabilization Fund should be converted into budget of development and directed on support of perspective investment projects, enlarging “narrow spots” of Russian economy. The most important of them are:

- modernization and through repairs of housing and communal services
- modernization and enlargement of transport networks (road-building, new national planes leasing, building and modernization of pipelines, waterways, etc);
- forming of full-fledged institutions of development, providing long-term crediting of perspective investment projects
- development of modern information infrastructure;
- development of network of funds of crediting of small-scale business;
- creation of network of venture funds for financing breaking innovation projects.

Significant increase of budget expenses should be accompanied by effective anti-inflation policy, necessary for suppression of inevitable attempts of monopolists to redistribute the increase of final demand in their favor. This policy should contain: energy activities carried out by authorities and aimed to decriminalize commodity distribution networks, especially grocery; drastic tightening of control of pricing on natural monopolies; suppression of cartel agreements; enlargement of access of enterprises to credit resources; stimulating scientific and technical advance and growth of manufacturing of goods of final demand; enlargement of system of guarantees of bank deposits.

Policy of research-and-production potential development

The main significance of sub-system of development in the system of state regulating of economy is connected with the key role of scientific and technical progress in providing modern economic growth. In our conditions the policy of development should provide forming of initiative impulse of increase of investment activity, essential for leading economy onto the way of stable economic growth.

The policy of development includes: determining priorities of long-term social, technical and economic development, preservation and development of scientific and technical potential of the country, forming of industrial, scientific and technical, budget policy on that base, providing their realization at the expense of using state guarantees, exercising purposeful investment and scientific programs, work of institutions of development, stimulating investment and innovation activity. *Indicative planning* should become an important part of policy of development. The policy of development should provide increase of competitiveness of national enterprises, growth of national leaders – “locomotives” of economic growth.

1. Choice and realization of priorities of technical and economic development

anticipate policy of structural reconstruction of economy on base of modern technologies, working out and realization of federal programs on its exercise. Definition of priorities of technical and economic development on main directions of scientific and technical advance should be made basing on mechanisms of long-term economic growth, global directions of technical and economic development and national competitive abilities. These priorities should be realized by the means of purposeful programs financed by the state, privileged credits, public purchases and instruments of state economic policy. The following requirements should be applied to the chosen priorities.

From *scientific and technical* point of view, the chosen priorities should be concordant to perspective directions of forming modern technological mode and timely creation of base for development of the following one. From *economic* point of view, state support of priority directions should be characterized by two main features: possession of significant external effect, improving total economic environment and conditions of development of business activity; initiation of growth of business activity in wide range of branches, connected with priority manufactures. In other words, it should create enlarging impulse of growth of demand and business activity. From *manufacturing* point of view, state stimulating should lead to growth of competitiveness of concordant manufactures, when they, beginning from a precise moment, enter independent way of enlarged reproduction in the scale of global market, playing the role of “locomotives of growth” for the whole economy. From *social point of view*, realization of priority directions of structural reconstruction of economy should be accompanied by expansion of employment, increase of real wages and qualification of employed population, total growth of population welfare.

The following ones belong to *priority directions*, realization of which should meet all essential criteria:

- mastering of modern informational technologies;

- development of biotechnologies, especially genetic engineering and other directions of application of microbiological researches, increasing effectiveness of health protection, agriculture, pharmacy and other branches of industry;

- development of new microelectronic technologies and modern sources of automation, providing drastic increase of competitiveness and effectiveness of national mechanical engineering;

- development of laser technologies;

- renovation of fleet of civil planes, wear of which has achieved critical level, based on organization of manufacturing and leasing of modern models of planes of domestic manufacturing;

- renovation of facilities of electric power stations, wear of which is approaching critical level, as well as modernization of existing and construction of new nuclear power plant;

- development of technologies of processing and using of natural gas;

- development of complex of technologies of nuclear cycle, enlargement of sphere of its application;

- development of modern TNs, providing drastic development of speed and reliability of combined transportations;

- development of house-construction with application of modern technologies;

- development of informational infrastructure based on modern systems of satellite and fiber-optic communication, cellular communication in cities;

- modernization of nonproduction sphere based on modern national facilities (diagnostic devices and lasers for medicine, computer engineering for educational purposes, etc)

- enhancement of environment based on modern nonpolluting technologies.

This list of priority directions of technical and economic development is made on the base of analysis of main tendencies of modern technical and scientific advance taking into account the state of national scientific and industrial potential. It does not claim to be complete and final. But it can be a starting point of forming and realizing the state policy of development.

2. Development and intensification of scientific and industrial potential work in present conditions when it is destroyed so much should be focused on the following directions:

- providing priority to state support of R&D work, conversion of science intensive industry and stimulating of scientific and technical advance, triple increase of state expenses on these goals;

- stimulating production of science intensive goods, active state support of export of such goods;

- stimulating transferring of technologies from military manufacture to civil one;

- finding and supporting development of technologies, mastering of which will grant Russian enterprises competitive advantages on the world market, realization of purposeful programs of their distribution;

- working out and realization of programs of development of territories with high concentration of scientific and technical potential (techno-cities and science-cities)

- increase of effectiveness of system of export control, active state policy on suppression of unapproved removal of perspective technologies abroad:

- subsidizing import of perspective modern technologies and scientific and technical information;

- creation of infrastructure, with the help of the state, providing commercialization of results of R&D work, including venture funds, collective scientific and information centers, engineer parks and etc.

3. Stimulating innovation activity is the main direction of the policy of development, key factor for overcoming depression. Realization of this direction includes the following elements:

- taking into account costs of enterprises on R&D, modernization of manufacturing and introduction of new technologies in the structure of costs of manufacturing, their release from taxation;

subsiding expenses on protection of intellectual property on national inventions and researches abroad;

preservation of informational infrastructure of scientific and research work, maintenance of network of scientific and technical libraries, subsiding their activity on providing services of using information networks and data bases and purchase of scientific literature;

supporting functioning of experimental test benches, installation and manufactures;

active engaging in existing priority directions of scientific and technical advance scientific and technical potential of the CIS.

protection of immaterial property rights

4. Forecasting and planning development of economy. The policy of development should determine sense of budget, external trade, industrial and other components of economic policy of the state, which should be connected by the means of prognostication, programming and indicative planning of development of economy of the country.

Forecasting, programming and indicative planning of social and economic development of the country should be divided according to the time scale on one-year, five-year and twenty-year prediction periods. In terms of modern scientific and technical advance, subjects of economic activity, state authorities and society need founded prediction of future tendencies of scientific and technical, social and economic development. In conditions of modern scientific and technical advance at least ten year planning of development is essential for enterprises.

As experience of radical reforms has shown, without purposeful strategy of development sources substitute aims, instrumental goals prevail on fundamental ones, there is no strategy of development and conjecture game of short-term commercial interests of main groups of influence dominate. In present system of regulating economy forecasting of social and economic development plays ornamental functions, while there is lack of a system of setting goals. Without elimination of these gaps it is impossible to form an effective system of managing economic development.

First of all, it is essential to change *technologies of social and economic development*. Extrapolation of former tendencies should not dominate in forming plans of future development. The aim is quite the contrary – to change existing tendencies, to overwhelm depression and initiate economic growth. Prognosis should be determined by combination of existing potentialities and wishful results. Then it should take into account patterns of modern economic development, should begin with determining clear goals of social and economic development on set perspectives and with inventory of existing resources, that can be used by the means of creating due macroeconomic conditions and measures of state regulation. These measures should determine the sense of indicative plans of social and economic development of the country.

Depending on the level of forecasting the sense of indicative plans should be different. In a *one-year cycle* of prognostication, indicative planning should contain characteristics of all main macroeconomic parameters (gross domestic product, employment, balance of payment,

investments, etc) and instruments of economic policy (interest rates, taxes, customs duties, budget expenses, including public purchases, norms of amortization, regulated prices, incomes, state investments, priorities and norms of work of institutions of development, etc). A part of technology of indicative planning for a year is forming of the state budget and setting a plan of development of the state sector.

In a five-year cycle of indicative planning determining of middle-term priorities of scientific and technical, social and economic development of the country, on which working out of purposeful programs and wishful proportions of economy should be based, is of the utter importance. An important aim of a five-year prognostic cycle is determining of anticipated disproportions and problems, hardening social and economic development of the country. Another aim is to search for new opportunities, appearing as a result of global scientific and technical advance and development of the global market. Basing on comparative analysis of emerging problems and opportunities one should search for ways of increasing competitiveness of the national economy, measures concerning realization of which will make up a four-year program of scientific and technical, social and economic development of the country.

A Twenty-year cycle of forecasting is aiming to orient long-term development of the country on the background of global tendencies and scientific and technical, economic development. The main aim on this level of prognostication is to search for strategic directions of increase of competitiveness of the national economy in the sphere of global economic development. Forecasting of breaking directions of technical and economic advance and modeling of a new technological mode, forming the trajectory of future economic growth and opening new opportunities of social and economic development are of the utter importance in that case. Basing on these suppositions, priorities of long-term economic development of the country should be formed, researches of purposeful scientific and technical programs, stimulating of development of scientific and manufacturing potential of the country should be carried out. Measures planned for that and directions of state economic and scientific and technical policy should be reflected in the concept of social and economic development of the country in a long-term period.

Unlike centralized directives, planned at the top of centralized planned system, indicative plans and programs of development of market economy should not contain tasks compulsory for economic subjects. They should be worked out with participation and taking into account proposals of business circles and scientific society. The very procedure of working out of plans is aiming to form national consensus with respect to priorities of social and economic development of the country and depends on institutions of social partnership.

Expanding effect of mechanisms of market competitiveness, state in such a way will assist decrease of vagueness and instability of market conjecture, help enterprises in orienting in perspectives of development of manufacturing and timely redistribute capital in mastering new technologies and markets, provide development of due informational environment. This is especially important for small-scale and middle-scale enterprises, lacking opportunities of prognosticating changes of market conjecture. Indicative plans do not prevent from free setting of aims of independent economic subjects, but are a kind of leading lights for them, showing them perspective directions of changing of economic conjecture and economic policy of the state.

Realization of strategies of economic development of Russia, characterized in the report, will allow to put Russia on the way of fast and stable economic growth with the rate of gross domestic product increase amounting not less than 10% and of investments – up to 20%, including mastering of key manufacture of a new technological mode – about 35%. This will allow to stop the movement towards raw-material peripheria of the world market, clear its way to innovation development, restore its abilities of independent development among leading countries. According to the forecast of development of Russian economy, worked out by the Institute of National economy forecasting differences in rates of increase of gross domestic product between innovation and inertial ways of development amount triple value (see Application, pic.9). Taking into account the growing lag of Russian economy on technical level and degradation of intellectual potential against the background of technical and scientific advance in leading countries time for making choice of innovation way development is limited to the nearest two-three years. If opportunities of structural reconstruction of Russian economy on the base of a new technological mode are missed, its future development will happen according to inertial script and will be limited to raw-material peripheria of global economy.

Modern economic history gives a lot of instructive examples of successful and disastrous choice of priorities. In the first case, the countries succeeded in riding on the crest of the long wave of economic growth through the timely mastering of the appropriate key technologies lying in the basis of the new technological mode. This was exactly the case with the "miraculous" achievements of the Soviet economy, including industrialization, rapid development of defense industry and the postwar breakthrough in nuclear and space technologies. Another example is the rapid postwar growth of Japan and Western Europe, followed by the appearance of new industrialized countries, including modern China. In the

second case, the state authorities wasted limited resources on the reproduction of outdated technologies contributing to the expansion of the existing technological gap. The same Soviet industrialization, which focused on the construction of water canals and railroads that could not be put to any effective use, can serve as an example of this policy. Another example is the pursuing industrialization carried out by a number of African and Latin American economies.

International experience teaches that only the faster growth strategy provides successful economic development. Pursuing growth usually leads to the increase in non-competitive industries, which burden the economy in the time of one of the recurrent structural crises provoked by the replacement of the then dominant technological mode.

The current dominant technological mode has already reached its maturity phase. Microelectronic and information technologies that form its core will soon exhaust all possibilities of further expansion. Further economic growth will be based on the latest technological mode, whose key factors include nano-technologies, information and communication technologies and genetic engineering. Their faster growth is essential for successful economic development in the long-term prospect. Health care and education alongside with information and communication technologies become engines of further economic growth.

Russia, China, India, Brazil, Cuba and some other peripheral economies are increasing their competitive advantages in a number of promising directions leading to the formation of the new technological mode. These activities will give them a chance to make a breakthrough and ensure fast economic growth during the replacement of the current technological mode expected in a decade.

APPENDIX

Fig.1

Aggregate index of modern technological mode growth

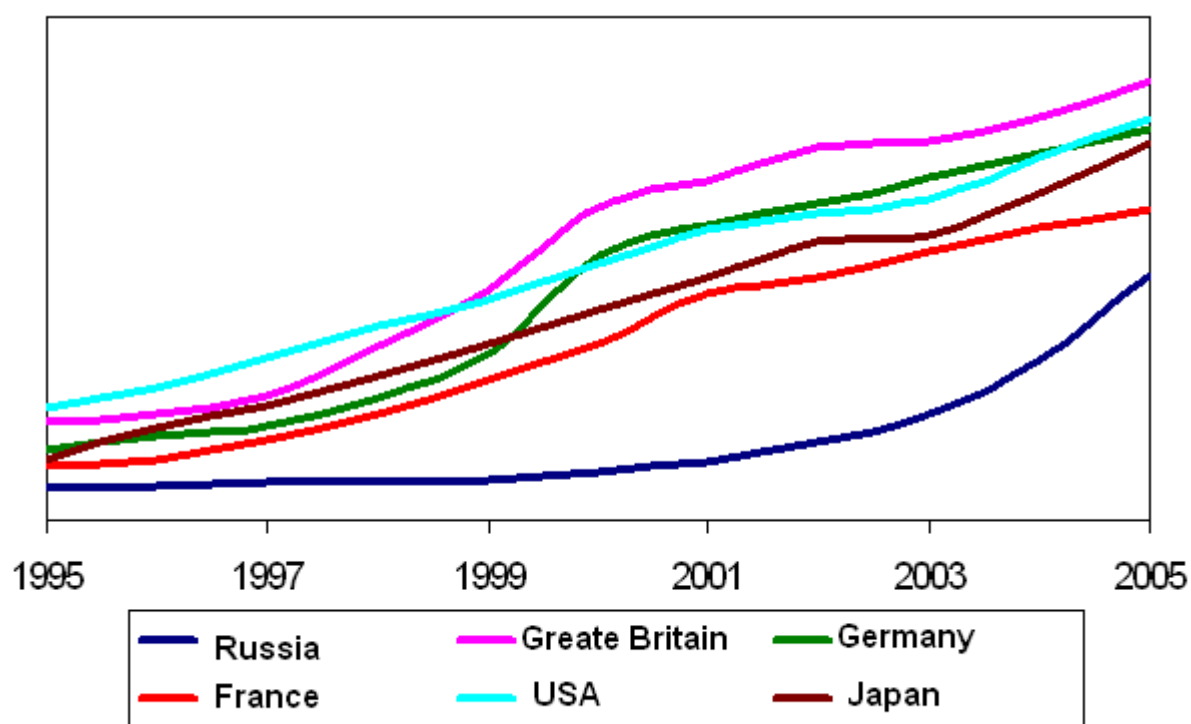


Fig. 2
Aggregate index of modern technological mode growth In
embryonic phase

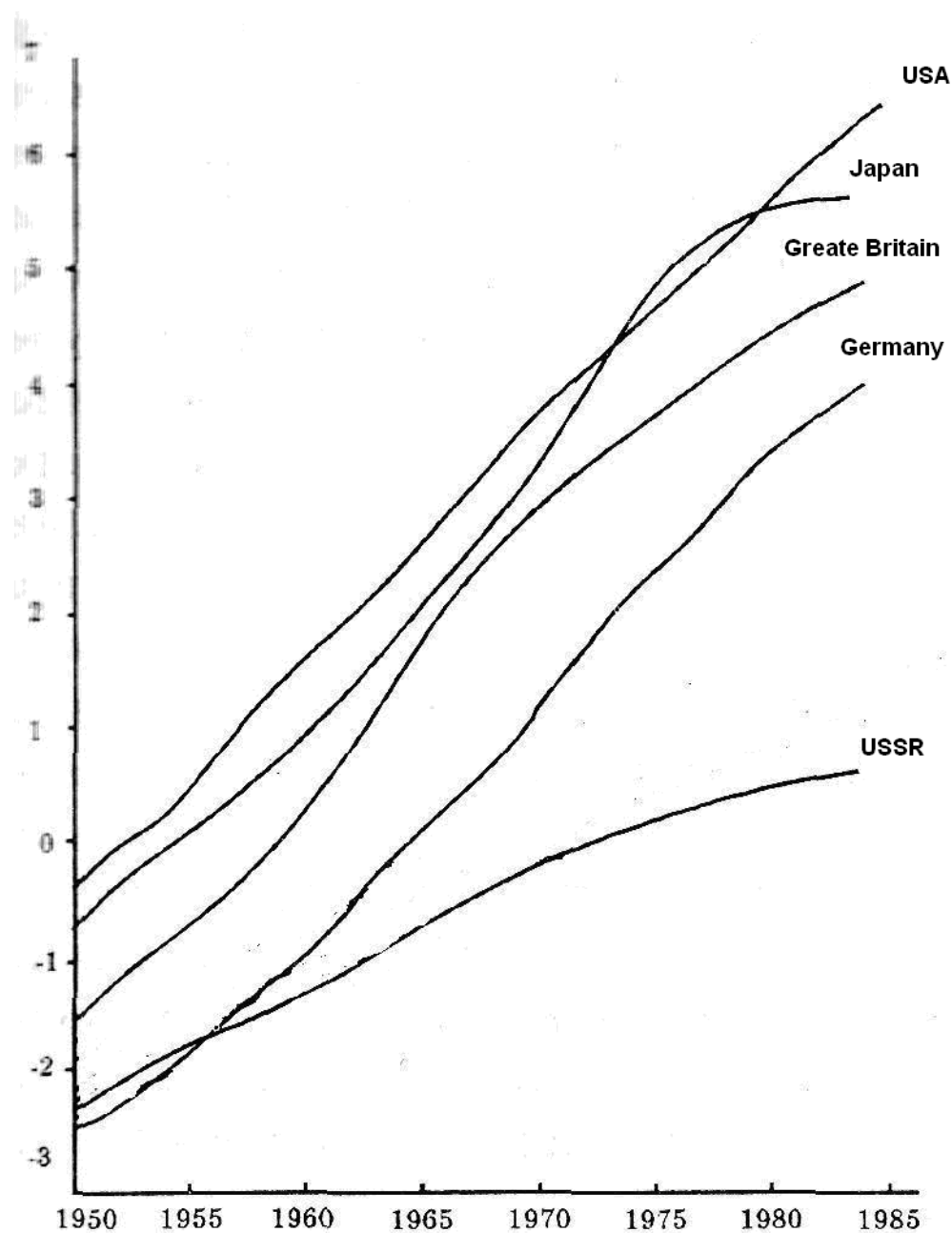


Fig. 3

Aggregate index of old technological mode growth

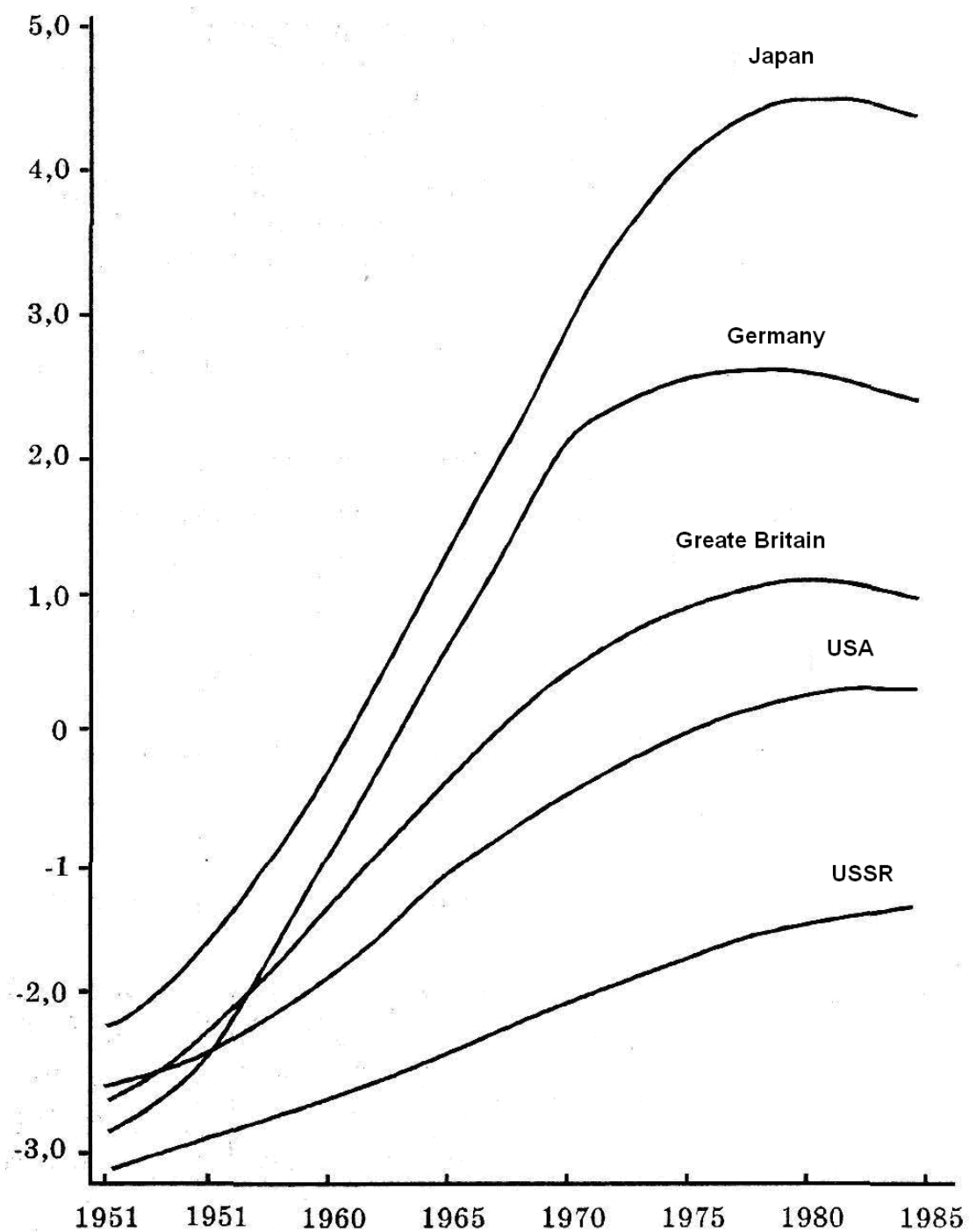


Fig. 4

Structure of industrial production (in percentage terms)

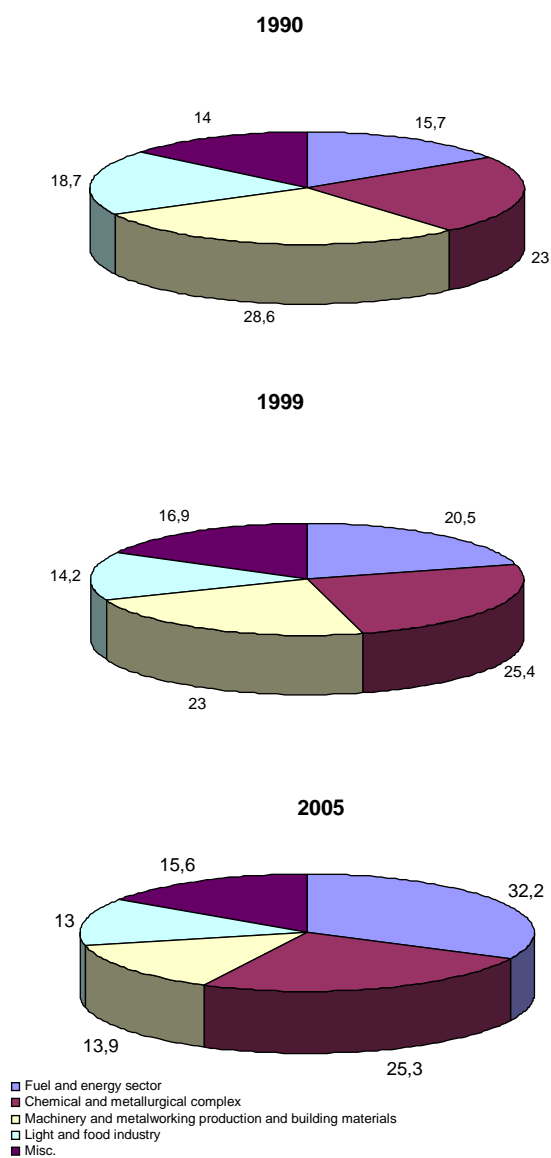


Fig. 5

**Average age of equipment
(years)**

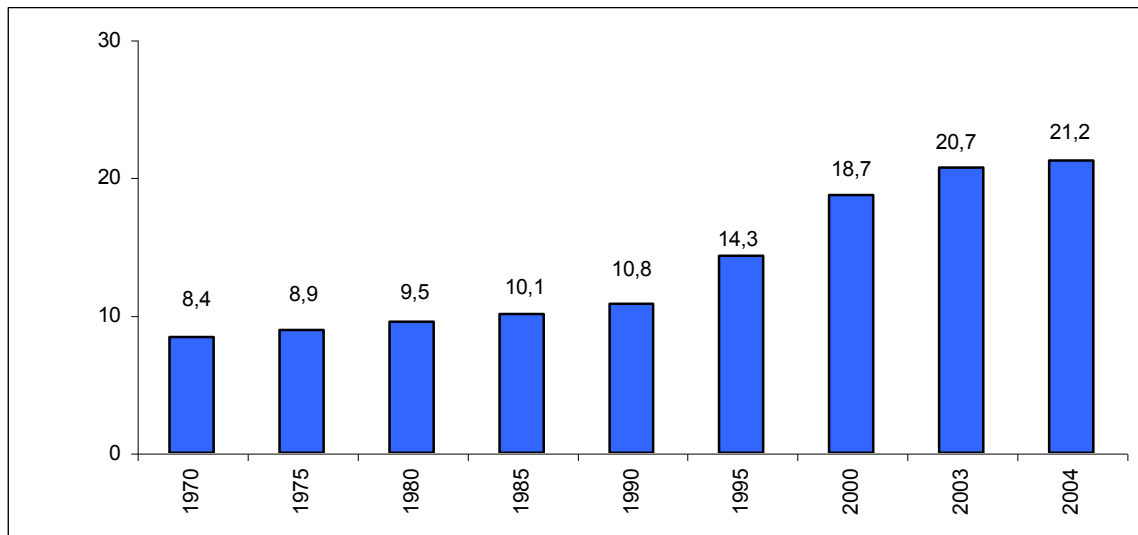


Fig. 6

R&D expenditures in percentage of gross domestic product

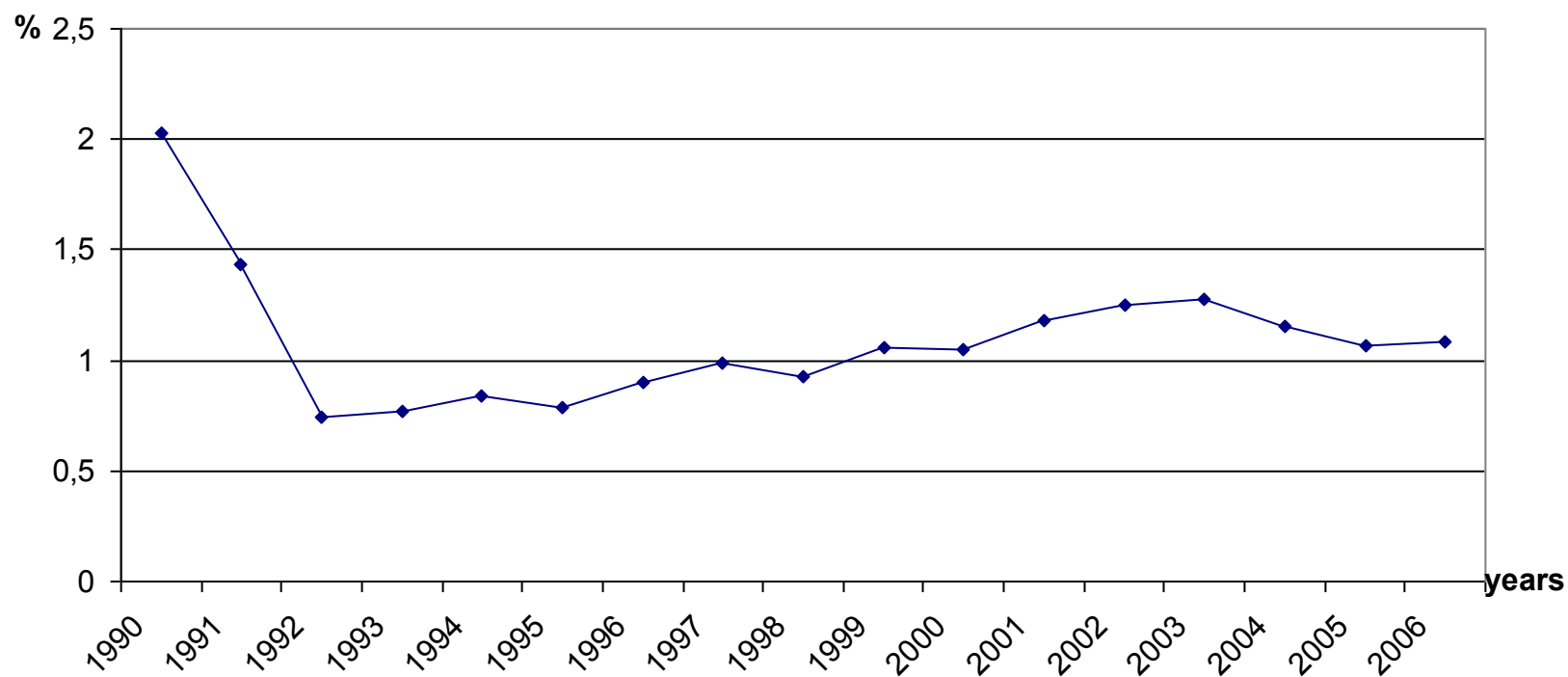


Fig. 7

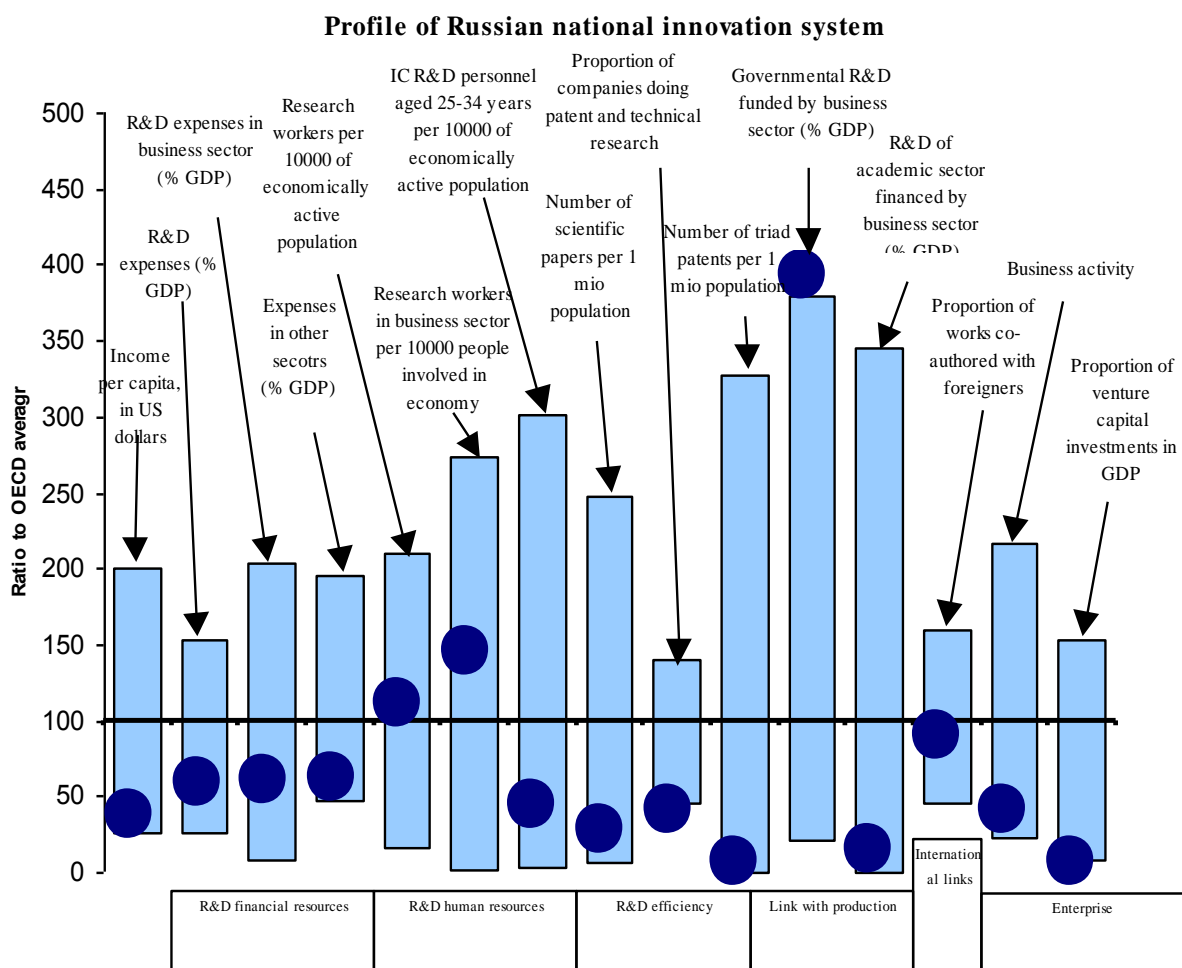


Fig. 8

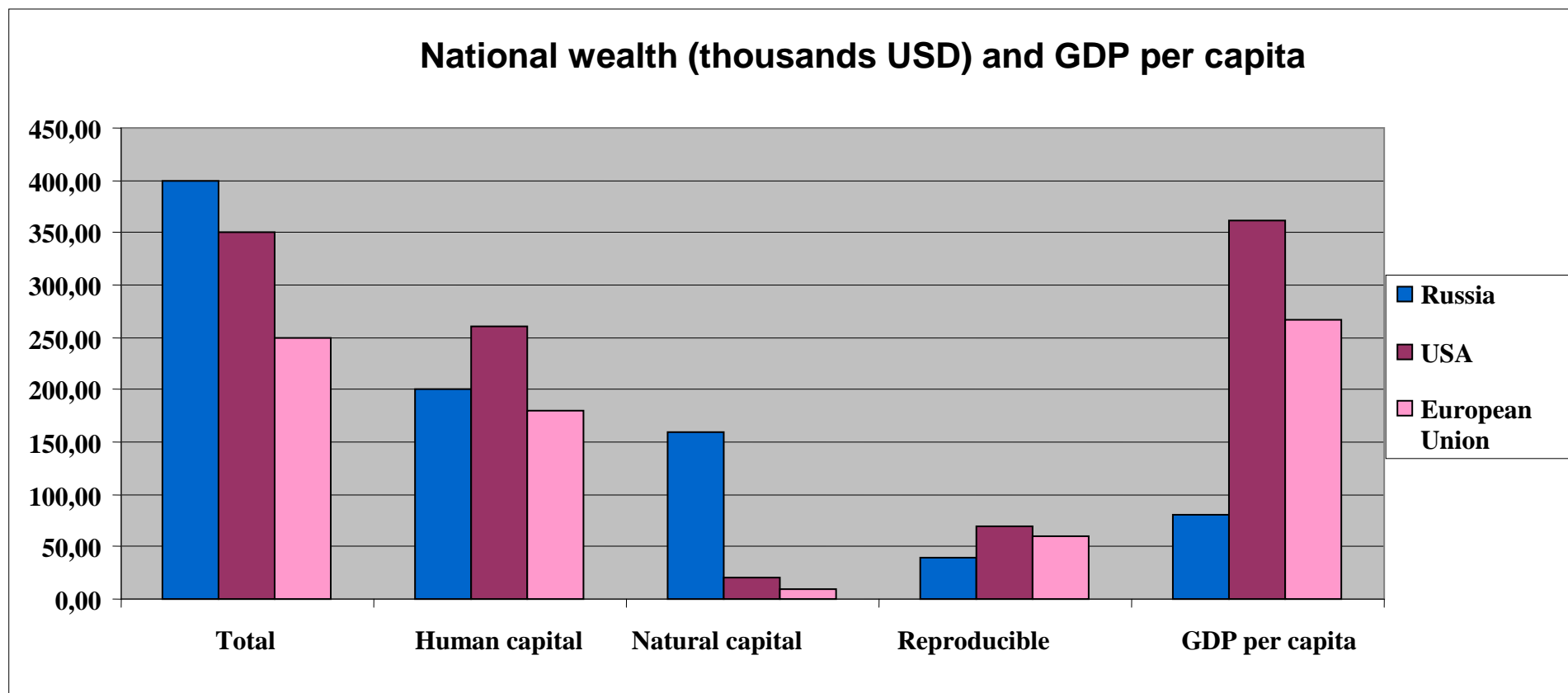


Fig.9

Share of imported goods in retail trade

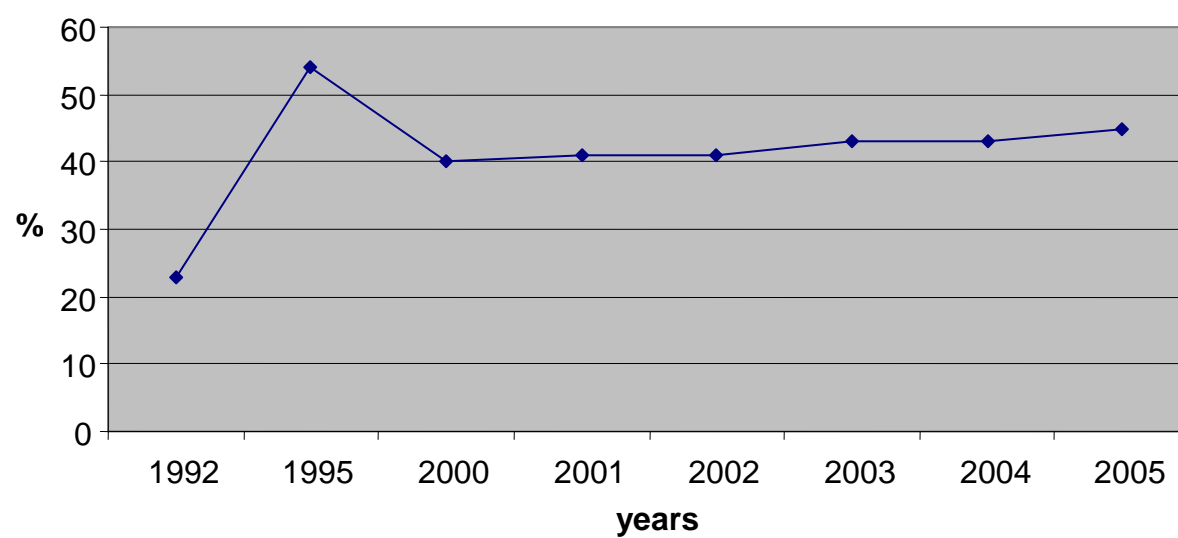
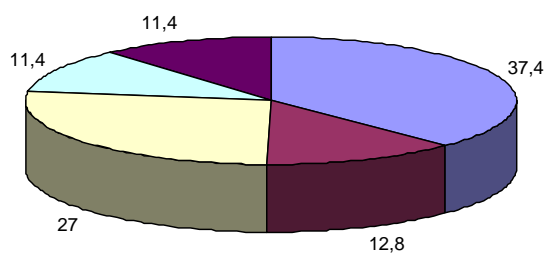


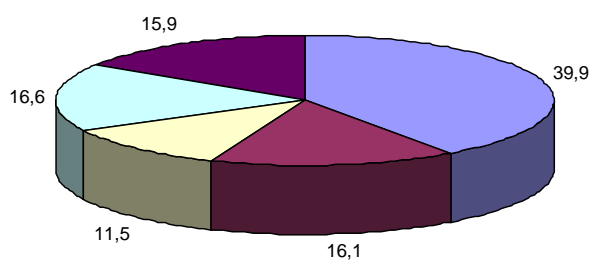
Fig. 10

**Structure of industrial investments
(in percentage terms)**

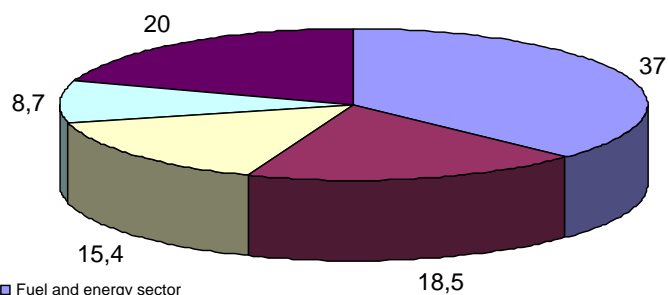
1990



1999

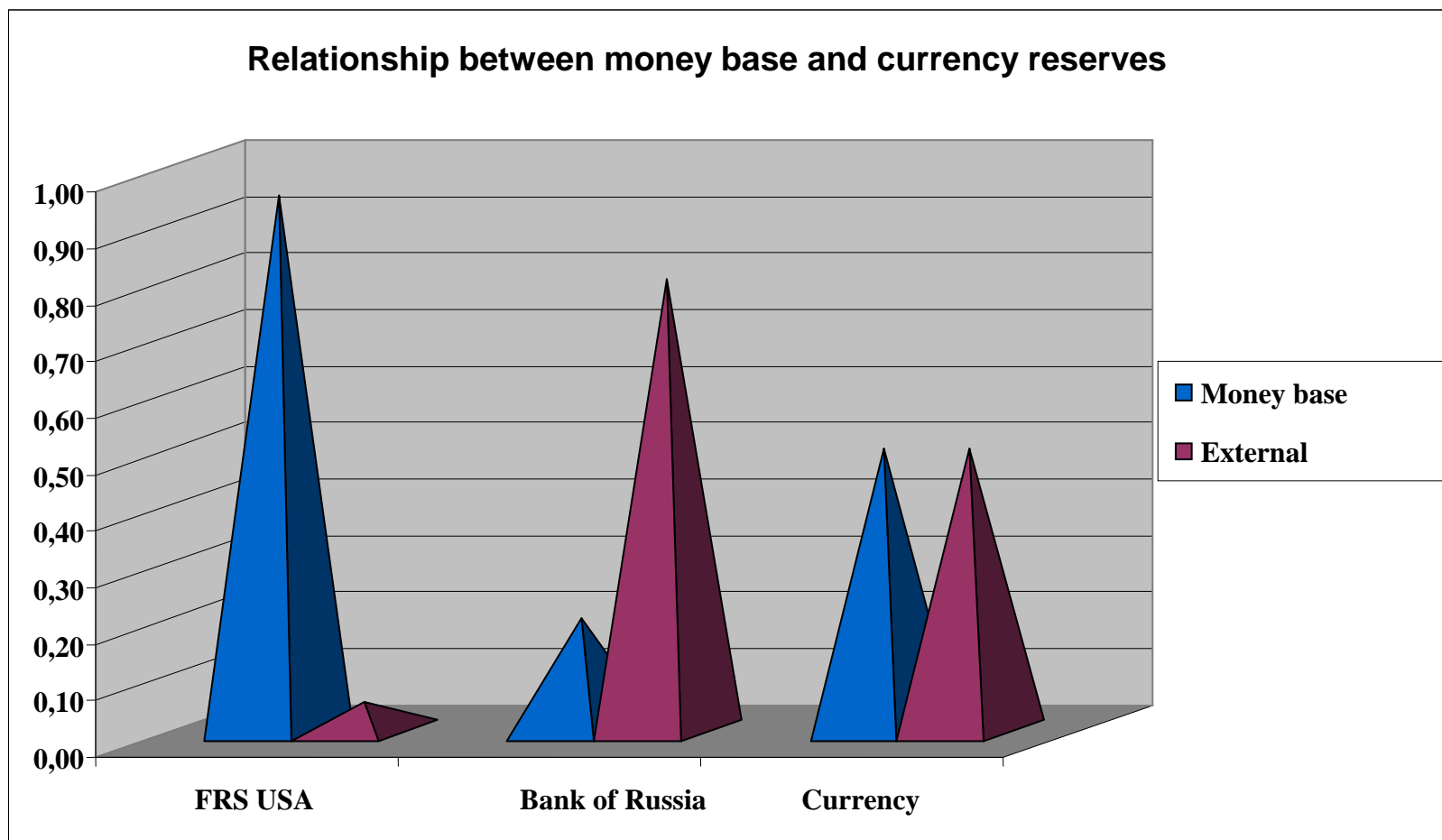


2005



■ Fuel and energy sector
 ■ Chemical and metallurgical complex
 ■ Machinery and metalworking production and building materials industry
 ■ Light and food industry
 ■ Misc.

Fig.11



Tab. 1.

Electronics production per capital, \$.

США	1260
Япония	1100
Европа	500
Россия	14

Сухарев О. Информационный сектор экономики: проблемы развития.
//Инвестиции в России №8, 2006.

The author

GLAZYEV, Sergey Yurievich – Academician of the Russian Academy of Sciences, Director - The Institute of New Economy.

Author of more than 200 scientific works in contemporary theory of long-term technical and economic development, theory of economic growth, social and economic development forecasting, economic reforms in Russia.

LITERATURE

1. Глазьев С.Ю. Теория долгосрочного технико-экономического развития. М.: ВладДар, 1993.
2. Денисон Э. Исследование различий в темпах экономического роста. М.: Прогресс, 1971.
3. Проблемы информационной экономики. Вып. 5. Национальная инновационная система России: проблемы становления и развития: Сб. науч. трудов / Под ред. Р.М. Нижегородцева. М.: ЛЕНАНД, 2006.
4. Василевский Э. Информационные технологии: масштабы и эффективность использования // Мировая экономика и международные отношения. 2006. №5
5. Стратегия научно-технологического прорыва. Сборник научных трудов под ред. Ю.В. Яковца, О.М. Юня. М.: МФК, 2001.
6. Борисов В.Н. Машиностроительный комплекс в воспроизводственном процессе: методология и инструментарий анализа и прогнозирования: Автореферат диссертации на соискание ученой степени доктора экономических наук. М., 2001.
7. Сухарев О. Информационный сектор экономики: проблемы развития // Инвестиции в России. 2006. №8.
8. Вальяно Д. Информационные технологии: расходная статья или фактор роста? // Межрегиональная группа ученых – институт проблем новой экономики. 2006. № 2-3.
9. Сорокин Д.Е. Россия перед вызовом.- М. Наука, 2003
10. Лейрих А.А. Масштабы и динамика показателей формирования сектора «новой» экономики // Межрегиональная группа ученых – институт проблем новой экономики. 2006. №2-3.
11. Федосов Е.А. Инновационный путь развития как магистральная мировая тенденция // Вестник Российской Академии Наук, 2006. №9
12. Голиченко О.Г. Национальная инновационная система России: состояние и пути развития. М.: Наука, 2006.
13. Информационная экономика и концепции современного менеджмента: Материалы Первых Друкеровских чтений / Под ред. Р.М. Нижегородцева. М.: Доброе слово, 2006.
14. Флерова А. О государственном регулировании инновационного развития в области наноматериалов и нанотехнологий в России // Инвестиции в России. 2006. №8.
15. Раткин Л. Нанотехнологический потенциал Российской экономики // Инвестиции в России. 2006. №11.
16. Kleinknecht A. Long Waves, Depression and Innovation // De Economist. 1986, N 1.
17. Инновационный путь развития для новой России / Отв. ред. В.П. Горегляд; Центр социально-экономических проблем федерализма Института экономики РАН. М.: Наука, 2005.
18. Белоусов А.Р. Долгосрочные тренды российской экономики. Сценарии экономического развития России до 2020 г. М.: Центр макроэкономического анализа и краткосрочного прогнозирования, 2005.

19. Прогноз социально-экономического развития Российской Федерации на 2007 год.
20. Россия в цифрах. 2006: Стат. сб. М.: Госкомстат России, 2006.
21. Вальтух К. К экспертизе “Основных направлений социально-экономической политики Правительства Российской Федерации на долгосрочную перспективу”. Новосибирск, 2000.
22. Основные направления денежно-кредитной политики на 2007 год – Банк России. М.: 2006.
23. Глазьев С.Ю. Кудрявая экономика // Политический журнал. 2006. № 43-44.
24. Обучение рынку / Под ред. С.Ю. Глазьева. М.: Экономика, 2004.
25. Стратегия экономического развития России. По материалам общероссийской дискуссии, проведенной Комитетом Государственной Думы по экономической политике и предпринимательству совместно с Отделением экономики РАН, Российским торгово-финансовым союзом и Российским экономическим журналом. // Российский экономический журнал. 2000. № 7.